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The Dental Digest

July 1931

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THE DENTAL DIGEST

VOLUME XXXVII JULY, 1931 NUMBER 7

CONTENTS

CONTRIBUTED ARTICLES PAGE

Some Essentials in Full Denture Technic. F. M. Hight, D.D.S. . . 427

Local Anesthesia for Dental and Oral Surgery. James L. Zemsky, D.D.S. 431

Will Society Benefit When Dentistry Becomes a Specialty of Conventional Medicine? A. T. Rasmussen, D.D.S., F.A.S.S. 443

The Metric System for General Anesthesia. Robert Friedman, D.D.S. 457

Light Supreme. A. L. Parsons, D.D.S. 461

An Outline of Dental Pathology. Nathaniel Freeman, D.D.S. . . 465

Dentistry Today. Arthur G. Smith, D.M.D. 469

American Dental Association Meeting 471

FEATURES

CORRESPONDENCE 474

DIGESTS 476

DENTAL ECONOMICS 482

PRACTICAL HINTS 488

DENTAL SECRETARIES AND ASSISTANTS 492

FUTURE EVENTS 497

THE DENTAL DIGEST

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THE DENTAL DIGEST

VOLUME XXXVII JULY, 1931 NUMBER 7

Some Essentials in Full Denture Technic

By F. M. HIGHT, D.D.S., Houston, Texas

(Literary Collaboration by GEORGE WOOD CLAPP, D.D.S.)

First Article

EXPERIENCES WITH FULL DENTURES

The modern technics for taking impressions in edentulous mouths are better than the unscientific technics which they have partly replaced. Not only do dentists who employ them properly have comparatively little trouble, but results which were entirely unknown a few years ago are matters of daily occurrence. There are, however, a few cases in which it is difficult to get good retention in one denture or the other. It is a matter of experience with almost every dentist that it is sometimes unexpectedly difficult to get good retention for a maxillary denture in a mouth in which retention should apparently be easily achieved.

When prosthetists are talking over their work among themselves, it is not uncommon to hear one say that he has little trouble in securing retention for maxillary dentures, but that he occasionally does have trouble with mandibular dentures. A dentist may be led to refer his troubles mostly to mandibular dentures by the character of complaints from patients. If a maxillary denture is uncomfortable only for short periods or is only occasionally dislodged, while the mandibular denture is continually uncomfortable or is always getting out of place, the complaints will naturally relate much more to the mandibular than to the maxillary. The dentist is then likely to conclude that the maxillary denture is satisfactory and to seek the cause of the trouble in the mandibular denture.

There are some mouths in which retention of mandibular dentures, in the sense of "suction," should not be attempted because it would necessitate a compression of the tissues which would be destructive.

When the mandibular ridge shows extensive resorption, the lingual outline of some portions of the denture will be quite different from the outline of the same portions of the denture when the ridge is firm and high.

If proper outline form for mandibular dentures is secured, more than half of them should show decided resistance to dislodgment, not only when they are first made but sometimes for years. The others are cases in which it was never possible to get such retention or in

which retention is lost because of tissue changes, as in the case of people who have worn artificial teeth for a long time, and in whose mouths tissue destruction has been so extensive that good retention can be attained only by a special outline form. Even in such cases it should be possible to secure sufficient stability to make patients fairly comfortable. Success with such people does not depend entirely upon the degree of retention of the dentures because they have developed a technic of their own for stabilizing their dentures.

Retention is to be expected in all maxillary dentures, and when it is not secured, the fault is in the technic or in some change of form of some of the materials used.

It is possible to tell by an examination just what the prospects of retention are with a mandibular denture. When retention is not secured in mandibular dentures under favorable conditions, the fault is probably in a failure to secure proper adaptation or outline. When, in such cases, the dentist has made the mandibular denture satisfactory by rebasing it and securing proper extension and adaptation, trouble with the maxillary denture sometimes becomes evident, although it may have been present all the time without being recognized.

It is comparatively easy to rebase a mandibular denture without disturbing the articulation and in this way to correct troubles of the sort referred to here. It is very difficult to rebase a maxillary denture by taking the impression in the denture without changing its relation to the jaw or to the other denture.

The most puzzling complaint about a new maxillary denture is that it drops at the most unexpected and unwelcome times. When a denture that has been in place but a few hours or, at most, a few days drops in this way, it may seem to possess such a degree of retention, when examined, that it cannot be easily dislodged by any tests that the dentist can apply. He is thus unable to see just what happens and to find the cause and a remedy, but this does not mean that the case should be dismissed with the explanation that it will be better "later on."

Such complaints may be made about dentures that seem to the dentist to be as good as can be made for the case. They may be repeatedly made by patients whose intelligence and integrity the dentist is bound to respect. Because it has been generally impossible to establish in the dental office the conditions that cause dentures to drop in the manner complained of, many dentists have concluded that the dropping was imaginary or the result of some fault on the part of the patient, or that in any event nothing could be done to correct it.

Such a decision by the dentist, with the natural conclusion that the patient will have to get along with the denture because nothing better can be done, is a mistake as to both fact and policy. Such dentures drop just as the patient states, and it is so annoying and sometimes so embarrassing that many patients will not cease their efforts to have it corrected until every opportunity has been exhausted.

It is a fact that some patients can cause such a denture to drop at will without apparent effort. That means

that the denture was never perfectly adapted. Something can be done for many such cases. When it is properly done, the dentures will not drop and the complaints will cease.

The people who make these complaints may be among the most desirable who ever come to the office. If the trouble is corrected, they become very valuable assets to the dentist; if it is not corrected, they will probably be lost to him forever. For all these reasons the dentist should recognize that the fault is in the dentures, even if he has already done his utmost on them; that he must increase his knowledge and skill, and that he should labor good-naturedly and painstakingly until the dentures are satisfactory.

Satisfactory dentures can be made for a considerable proportion of patients who have suffered from persistent dropping. When such dentures are placed in the mouths of intelligent patients, they immediately recognize, by feeling, a difference which is not discernible to the dentist by observation or by any tests he can make. They sometimes say, "That plate fits because I can feel it all over my mouth"; or, "I thought the first plate fitted, but I realize now that it did not"; or, "That plate is not going to drop because it does not feel as if it would." If they are asked why they did not say that the first plate did not fit all over the mouth, they may reply that they did not know it was expected to fit that way.

WHY DENTURES DROP

It may be well to list the reasons which, either singly or jointly, appear to be the cause of such dropping of the dentures as has been described and to make more extended comment on some of them later. In order of importance, from greatest to least, they seem to be as follows:

(1) Faulty adaptation of the dentures.
(2) Overextension or underextension.
(3) Faulty occlusion.
(4) Faulty articulation.
(5) Changes in the tone of the oral tissues.
(6) Condition of the saliva.

Deformities of the maxillæ may make success with dentures difficult or impossible, but as they do not come within the scope of this article, they will not be considered here.

A FEW DEFINITIONS

As the articles which follow are to have practical value, it is necessary that there should be agreement as to the meaning of terms that are to be used repeatedly. This necessitates some definitions. The writer of these articles is not the author of a dental dictionary, but sometimes the definitions in such dictionaries do not completely express what he wants to say.

The following definitions are offered merely as explanatory of the meaning of the terms as they will be used in these articles:

ADAPTATION. Contact of the dentures with the tissues which they cover, except where relief is made. Much remains to be learned as to how best to get good adaptation and how to recognize it when secured.

UNDEREXTENSION. That condition in which the borders of a denture are not extended far enough onto movable tissue to form a valve seal.

OVEREXTENSION. That condition in which a denture is extended farther than is necessary to make a valve seal and far enough so that it is dislodged by some movement of the tissues.

FAULTY OCCLUSION. Such a relation between

the teeth in central relation as tends to dislodge one or both dentures. It may arise from errors in establishing jaw relations or in the arrangement of the teeth.

Faulty Articulation. Perfect articulation requires that the dentures balance each other in all movements of the mandible with the maxillary and mandibular teeth in contact. This tends to hold the dentures in position. Faulty articulation is a failure of this balance, with a consequent displacement of one or both dentures.

Changes in Tissue Tone. It is a matter of common observation that in some cases the condition of the oral tissues changes noticeably during the day. This may affect the fit of the dentures. In some diseased conditions it has proved impossible to make dentures fit as well in the afternoon as in the morning. Probably less is known about this condition than about any other factor in denture work.

Salivary Conditions. Any departure from the usual salivary conditions may make it difficult to secure satisfactory retention of artificial dentures. This may be especially noticeable when the saliva is so scanty as to make the mouth rather dry, or when it is thick and ropy.

1323 Medical Arts Building

(To be continued)

[PULPLESS TEETH]

With full realization of the gravity of the secondary disturbance that may result from the retention of undetected foci about pulpless teeth, I am satisfied that the public welfare will not be served by indiscriminate removal of all pulpless teeth, as advised by some practitioners. But in the present state of our knowledge all of them should be kept under observation. Numerous observers have recorded the presence of pathogenic bacteria in pulps and in apical areas in which no indication of pathology or lowered function could be detected. In the absence of definite evidence of the presence of a focus I would counsel a conservative attitude by all practitioners of medicine in urging the removal of teeth regarded as important by a well qualified dental consultant familiar with root-therapy practice.

—Gillett.

Local Anesthesia for Dental and Oral Surgery

By JAMES L. ZEMSKY, D.D.S., New York, N. Y.

Oral Surgeon, Midtown Hospital; Lecturer on Oral Surgery, Postgraduate Courses, Allied Dental Council; Author of *Oral Diseases* and *Outline of Oral Surgery.*

In any surgical and in many dental operations the first step that requires consideration is anesthesia. There are two forms of anesthesia, general and local, each having its particular advantages and disadvantages. While each of these methods has its special indications and contra-indications, local novocain anesthesia as a general rule should be the choice of dental practitioners for these reasons:

(1) The induction of the anesthetic is less painful, since the areas into which it is injected are structures of loose connective tissue and no pressure is required to force the fluid into the tissue when injecting.

(2) The anesthesia continues over a longer period.

(3) It affords an opportunity to anesthetize larger areas with one or two injections.

(4) There is less likelihood of spreading infection, because the injection is made into areas remote from the seat of infection.

(5) The resistance of the tissues is affected to a less degree, since the factor of mechanical injury (force and distention) is eliminated.

The advantages to be derived from block anesthesia will amply compensate the operator for the effort expended in acquiring its technic, which is rather a simple procedure. For the various operations in the mouth there are six injections which produce nerve-block or conductive anesthesia. These are: (1) the mandibular; (2) the mental; (3) the tuberosity; (4) the infraorbital; (5) the incisive; (6) the posterior palatine. Since the success of this form of anesthesia depends largely upon the precision with which the various injections are made, a thorough knowledge of the anatomical structures of the mandible and maxilla together with their innervation is essential. Without attempting to give a complete account of the subject, a cursory review of certain of its phases is necessary. This will include the characteristic anatomical features of the mandible and maxilla in their relation to the nerves which must be anesthetized to secure complete anesthesia of the parts to be operated upon.

THE MANDIBLE

In connection with the mandibular injection it is necessary to remember the following structures of the mandible: (1) the external and internal oblique lines; (2) the retromolar triangle; (3) the mandibular and mental foramina. The accompanying illustrations emphasize all of these important structures.

In Fig. 1, which represents the occlusal view of a mandible, the retromolar triangle is clearly seen. It is bounded by the external oblique line outwardly and the internal oblique line inwardly,

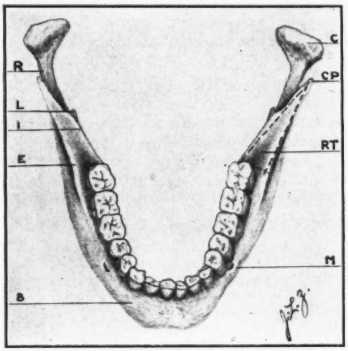

Fig. 1

Diagrammatic drawing of a mandible showing the occlusal surfaces of the teeth, body of the mandible (*B*), ramus (*R*), condyle (*C*), coronoid process (*CP*), external oblique line (*E*), internal oblique line (*I*), retromolar triangle (*RT*), lingula (*L*), mental foramen (*M*).

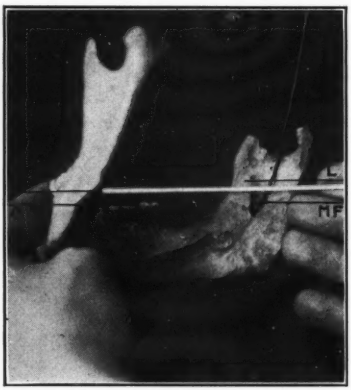

Fig. 2

Photograph of the inner aspect of the ramus, illustrating the relative position between the occlusal surfaces of the teeth and the horizontal plane of the insertion of the needle for mandibular anesthesia. It shows the occlusal surface (*O*), lingula (*L*), and the mandibular nerve (*MN*). The horizontal plane, or the level at which the needle is inserted for mandibular injection, is indicated by the pointer (*P*). This plane is about 1 cm. above the occlusal surfaces of the posterior mandibular molars. (See Fig. 6.) At *MF* is seen the mandibular foramen.

its apex being the intersection of the oblique lines meeting at the tip of the coronoid process, while its base is situated posterior to the third molar. Between the premolars the mental foramen is clearly seen. In Fig. 2 the mandibular foramen, into which a wire has been inserted, is easily seen at the inner aspect of the ascending ramus.

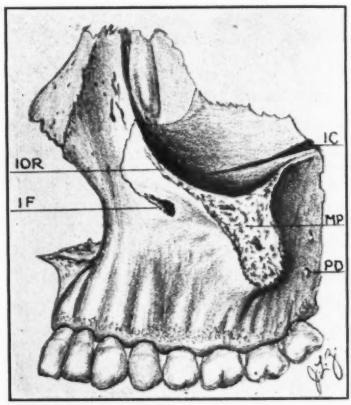

Fig. 3

Drawing (after Gray) illustrating the maxilla and showing the most important structures in making the infraorbital and posterior palatine injections. *IOR*—Inferior orbital ridge. *IF*—Infraorbital foramen. *IC*—Infraorbital canal. *MP*—Malar process. *PD*—Posterior dental foramen.

The Maxilla

At the facial surface of the maxilla, located about a quarter of an inch below the lower border of the orbit and almost at its middle, there is an opening known as the *infraorbital foramen* (Fig. 3). Looking at the palatal surface of the maxilla in the median line, and posterior to the central incisors, there is a large opening known as the *incisive, anterior or nasopalatine foramen.* A

little posterior to the third molar is an opening called the *posterior palatine foramen.* At the posterior surface of the tuberosity there are a few very small foramina known as *posterior dental foramina.*

The malar process is a prominent ridge separating the zygoma and facial surfaces of the maxilla and extending upward from the socket of the second molar.

The entire structure of the maxilla is *very spongy,* while that of the mandible is quite compact.

NERVES SUPPLYING THE MAXILLARY BONE

The nerves which supply the mandible, maxilla, the teeth and their surrounding structures are all branches of the trigeminal or the fifth cranial nerve. Those of particular interest in connection with oral surgical procedures are the maxillary and the mandibular branches.

SUPERIOR MAXILLARY NERVE

The superior maxillary nerve supplies the maxilla, the maxillary teeth, the periosteum and the gum. To anesthetize these structures, it is necessary that the various branches of this nerve be anesthetized. This is accomplished by depositing novocain solution at the various points at which the nerve branches either enter the bone or emerge from it. For instance, some branches of the superior maxillary nerve and the posterior dental nerve enter the maxilla through the posterior superior dental foramen, and when the anesthetic solution is deposited near these foramina by a technic known as the *zygomatic* or *tuberosity injection,* there results anesthesia of the pulps of the three molars and the gum, the buccal portion of the bone as well as the periosteum covering it, and the mucous membrane in the region of the molars. When a solution of novocain is deposited on the palate posterior to the third molar (posterior palatine injection), the anterior palatine nerve, which emerges from the posterior palatine foramen, becomes anesthetized and with it the posterior portion of the palate, its periosteum and mucous membrane. An injection into the papilla posterior to the anterior maxillary centrals will result in an anesthesia of the nasopalatine nerve, which emerges from the anterior or nasopalatine foramen, and thus the anterior part of the palate and its mucoperiosteum is completely anesthetized. This is known as the *anterior palatine injection.*

In giving an infraorbital injection the novocain solution is deposited near or at the infraorbital foramen and in this way the superior dental nerve given off in the infraorbital canal and traversing the anterior wall of the antrum is anesthetized, resulting in anesthesia of the anterior part of the maxilla, the pulps of the anterior teeth and all the surrounding tissues, *i. e.,* the periosteum and the gum.

THE MANDIBULAR NERVE

The mandibular nerve is a large nerve trunk which enters the mandibular canal through the mandibular foramen and supplies the entire mandible, its teeth and mucoperiosteum. Therefore, when the solution of novocain is deposted at the mandibular foramen near the mandibular nerve, an almost complete anesthesia of the half of the

mandible, the teeth and the mucoperiosteal structure on the injected side is the result. The anesthesia has been characterized as "almost complete," because there are two more nerves which supply the mandible and its soft covering, *viz.*, the lingual nerve and the long buccal nerve.

The Lingual Nerve

The lingual nerve is a branch of the inferior dental nerve supplying the tongue, the floor of the mouth and the mucoperiosteum of the lingual aspect of the mandible. Since its course is close to that of the mandibular nerve, it may be anesthetized together with the mandibular nerve, precautions being taken that the solution is deposited not as deep into the tissues as when attempting to obtain mandibular anesthesia. The technic of this injection will be given subsequently.

The Long Buccal Nerve

The long buccal nerve is another branch of the mandibular nerve supplying the mucoperiosteum of the bone covering the buccal aspect of the roots of the molars. For anesthetizing this region the long buccal injection is required, which is merely an infiltration of this area.

Mandibular Injections

Of all the various types of nerve-blocking, the mandibular injection is the only true conduction anesthesia, for by merely one injection the entire half of the mandible may be perfectly anesthetized. Obviously the technic of the injection for either of the sides is practically identical, the only difference being that when the left mandibular injection is given, the syringe is held in the right hand and the palpating is done with the left, while in giving a right

Fig. 4

The first step of the mandibular injection. It illustrates the relation between the various anatomical structures and the syringe. (See Fig. 8.)

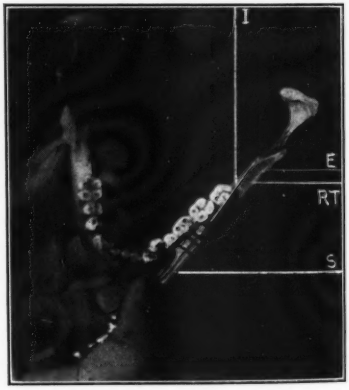

Fig. 5

The second step of the mandibular injection, showing the needle ready to pass the internal oblique line. Here a few drops of novocain solution are deposited in order to anesthetize the lingual nerve (Fig. 9). *E*—External oblique line. *I*—Internal oblique line. *RT*—Retromolar triangle.

mandibular injection the syringe is held in the left hand and the palpation is done with the right. In either instance, however, the ball of the index finger is used for palpating the structures.

TECHNIC OF MANDIBULAR INJECTION

Standing in front of the patient, the operator places his index finger in the buccal fold between the cheek and the mandible, and by forcing the finger gently toward the third molar the short ridge, known as the *external oblique line of the ascending ramus* (Fig. 1), will soon be felt with the tip of the finger. Having reached this structure, the finger follows it upward until the dorsal aspect of the finger can rest on the occlusal surfaces of the molars. The position of the nail of the palpating finger determines the level for the insertion of the hypodermic needle, for at approximately this plane the inferior dental nerve enters the mandibular foramen (Figs. 2, 6, 7). The anesthetic solution should be deposited around the mandibular nerve at this region.

Before the needle is inserted, the palpating index finger, which now rests with its dorsal aspect on the occlusal surface of the molar teeth and presses with its tip against the external oblique line of the ascending ramus, is rotated so that the dorsal aspect of the hand is turned toward the cheek and the finger-nail faces the mandibular third molar. While the position of the index finger-nail is thus being changed, its level should not be altered. To insure this, the tip of the palpating finger-nail should be firmly pressed against the mucous membrane covering the external oblique line and the finger rotated as if the middle of the finger-nail were a pivot. *This is very important,* for the point of insertion of the needle for

Fig. 6

The third step in the mandibular injection, illustrating the relation between the syringe and the various anatomical structures of the mandible. *L* indicates position of the lingula. (See Figs. 2, 7.)

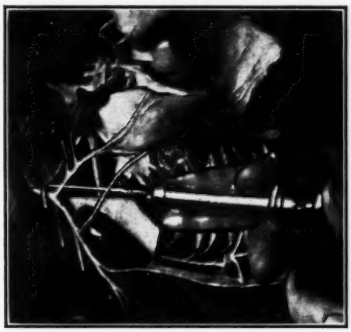

Fig. 7

Photograph showing the relationship of the facial nerve and the point of the mandibular needle when it is inserted *too deep*. Compare with Fig. 6, showing the correct position of the needle. When the syringe is forced too far, as shown in this illustration, temporary facial paralysis will result. *This should be avoided.*

mandibular injection is determined in such a manner.

Without changing the position of the palpating finger, which now rests with the middle point of the finger-nail against the external oblique line of the ascending ramus, with the nail turned toward the buccal surfaces of the molar teeth, and while the dorsal aspect is directed toward the cheek, the mucous membrane of the area posterior to the third molar and toward the tonsils is painted with tincture of iodin. With the syringe held in a penlike position (Figs. 4, 5) and its bevel away from the bone, the needle is inserted, being held in a horizontal plane with the middle of the index finger and on a plane with that of the buccal surface of the mandibular molar (Figs. 4, 8). The position is correct when the needle strikes the bone. If the needle does not touch the bone, its position is wrong.

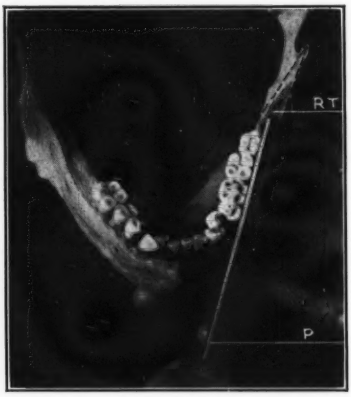

Fig. 8

The pointer (*P*) indicates the position of the needle during the first step of the mandibular injection. It is in the same plane (vertical) with the buccal surfaces of the molars. The point of the needle should reach the retromolar triangle. (See Fig. 16.)

Fig. 9

This illustrates the position of the needle during the second step of the mandibular injection. The pointer (*P*) is shown ready to pass the internal oblique line. (See Fig. 5.)

Before the needle is again inserted into the tissues, the syringe should be withdrawn and another attempt made, moving it either further from or nearer to the palpating finger. Great care should be taken to place the needle at about one centimeter above the occlusal surfaces of the mandibular molars (Figs. 2, 6), for should the needle be inserted too *low,* the anesthetic solution will not reach the inferior dental nerve, since the nerve at this point has already entered the mandibular foramen. Again, if the needle is inserted too high, there are no distinct landmarks to be used as a guide, and the likelihood of failure is greater.

When it has been ascertained that the needle is in a correct position, the next step is to withdraw the syringe slightly, free the needle-point from the periosteum, move it a little toward the median line and then reinsert it. If the

bone is again felt, the syringe is retracted and moved still further to the median line. This is repeated until the needle does not encounter any hard resistance. When this occurs, the needle has just passed the internal oblique line of the ramus (Figs. 5, 9) and is in close proximity to the inner aspect of the ascending ramus. Keeping close to the surface of the bone, the needle is now advanced about half a centimeter, where the deposition of a few minims of the solution will produce anesthesia of the lingual nerve, resulting in an anesthesia of the mucoperiosteum covering the lingual aspects of the mandible.

The last step in the technic of the mandibular injection is to advance the needle, still as close to the inner aspect of the ascending ramus as possible, until two-thirds of its length (1⅞ inches) has disappeared in the tissues. At this point the syringe is entirely emptied (Fig. 6).

The signs of satisfactory mandibular anesthesia are: (1) numbness of the teeth, (2) tingling sensation of the lip and side of the tongue, (3) anesthesia of the mucous membrane. It is important that the needle should not be placed too deep into the tissues, for it may come too close to the parotid gland, in which case the facial nerve, passing through it, will be anesthetized, usually resulting in temporary paralysis of the face (Fig. 7).

LONG BUCCAL INJECTION

In many instances, despite a perfect mandibular anesthesia, which can be determined by the presence of the signs indicated above, there is a sensation of pain upon pressure with a sharp instrument upon the buccal mucous membrane in the region of the molars. In these cases an infiltration of the soft tissues in this area will anesthetize the structures. The needle should be inserted low at the bottom of the fold and carried from the region of the second bicuspid toward the third molar. The solution should be deposited as the needle penetrates the tissues. This will render the injection almost painless.

MENTAL INJECTION

The syringe is held with the needle directed downward at a right angle to the occlusal surfaces of the mandibular teeth, and its point is inserted into the mucous membrane in the fold between the roots of the bicuspids. This is the point from which the mental branches of the mandibular nerve emerge (Figs. 10, 11, 12). The result of such an injection will be complete anesthesia of the anterior mandibular teeth on the injected side. The buccal hard and soft

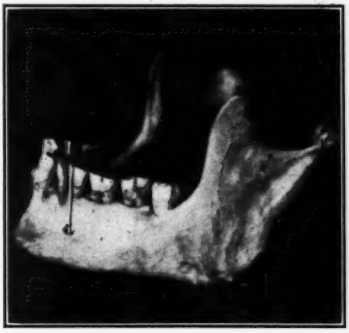

Fig. 10

Photograph of a mandible showing the mental foramen, the location of which is indicated by a needle passing between the two bicuspids and disappearing into the foramen.

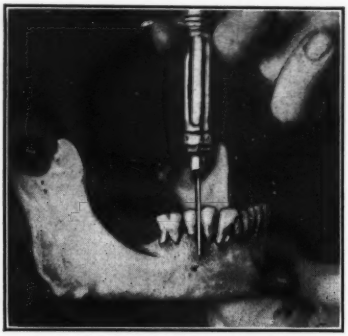

Fig. 11

The position of the syringe in making a mental injection. The needle is parallel to the long axis of the bicuspids and is introduced midway between these teeth.

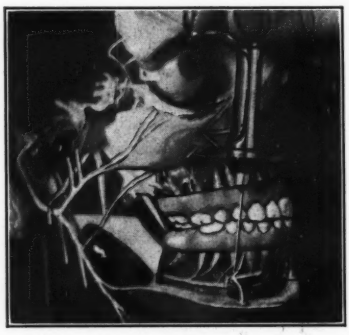

Fig. 12

The position of the syringe when making a mental injection and the relation of the needle, the nerve supply of the mandible and the teeth.

tissues covering these teeth are also anesthetized, but the lingual aspect of these tissues must be anesthetized by infiltration. A double mental injection and lingual infiltration will anesthetize all the anterior mandibular teeth and their underlying and overlying hard and soft structures.

Tuberosity Injection

When the tuberosity injection is given, the maxillary third, second and part of the first molars, the buccal aspect of the bone surrounding these teeth, and the buccal mucoperiosteum

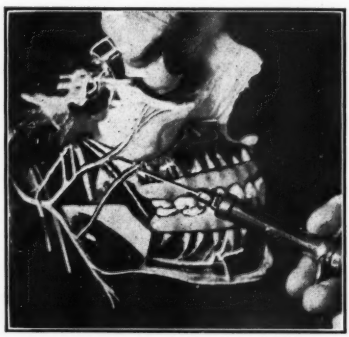

Fig. 13

The position of the syringe when making a tuberosity or zygomatic injection.

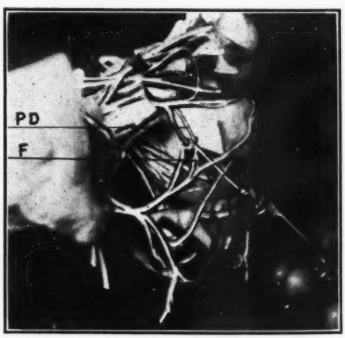

Fig. 14

Photograph of a prepared specimen illustrating the position of the needle in its relation to the nerve supply in making a tuberosity injection. *F*—Facial nerve. *PD*—Posterior dental nerve. (See Fig. 3.)

are anesthetized. The technic of the injection is as follows:

The malar process of the maxilla is located by palpating the buccal fold in the region of the maxillary molars (Fig. 3). After the mucous membrane in this region has been painted with a solution of tincture of iodin and ether, the point of the needle is inserted in the mucous membrane close to the middle of the distal root of the first molar, aiming at the apex of the mesial root of the adjoining molar (Fig. 13). This will make the needle pass beneath the malar process of the maxilla. The syringe is forced upward until almost the entire length of the needle is buried in the tissues. At this position of the syringe the tip of the needle is in close proximity to the posterior dental canals, the point of entrance of the posterior superior dental nerve (Figs. 3, 14). When the novocain solution is deposited here, this nerve is anesthetized and is followed by complete anesthesia of the tissues innervated by this nerve. About fifteen minutes after the injection is made, anesthesia ensues, which continues from one-half to a full hour.

INFRAORBITAL INJECTION

The infraorbital foramen may be felt by placing the tip of the finger upon the lower ridge of the orbit at its middle, after forcing it down about half a centimeter (Figs. 3, 15). With the finger in this position, the upper lip is raised with the thumb, thus exposing the area where the needle is to be inserted. When the mucosa at the buccal fold has been painted with tincture of iodin and ether, the point of the needle is introduced into the tissues, the point of insertion being between the cuspid and the first bicuspid and aiming toward the foramen, the position of which is indicated by the tip of the index finger. When the point of the needle strikes the bone, the syringe is emptied and the needle withdrawn. The tissues under the eyes are massaged with the thumb, and this forces the novocain solution into the infraorbital canal. Almost immediately

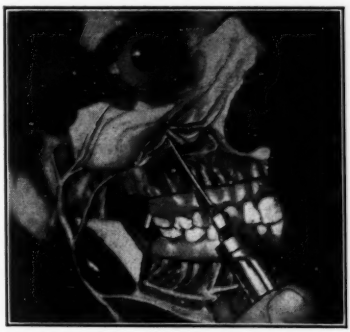

Fig. 15

The position of the syringe in making an infraorbital injection. It illustrates also the relationship of the infraorbital nerve to the teeth and surrounding structures.

the buccal mucoperiosteum covering the anterior teeth and sometimes also the bicuspids, the pulps of these teeth and the anterior part of the superior maxillary bone are anesthetized.

In some instances the bicuspids and the mesial root of the first molar cannot be anesthetized by any of the injections described, and anesthesia of these teeth and their surrounding structures can be secured by local infiltration only. The injection in such cases should be made high in the fold, and the solution

deposited between the bone and the periosteum covering it.

Posterior Palatine Injection

Posterior to the last maxillary molar a slight depression on the palate may be seen (Fig. 16). By painting this point with a solution of iodin and ether a deep stained area is readily obtained. This is due to the fact that there is more soft tissue in the posterior palatine foramen than in the surrounding structures, and therefore more tincture of iodin is absorbed here than at the mucoperiosteum. The syringe is placed almost perpendicular to the palate, and after the tip of the needle is inserted into the dark-stained spot, it is brought to the median line and advanced a little posteriorly (Fig. 16). Only a very small quantity of the solution is necessary to obtain anesthesia of the palate, which spreads to the median line and reaches as far anteriorly as the bicuspids.

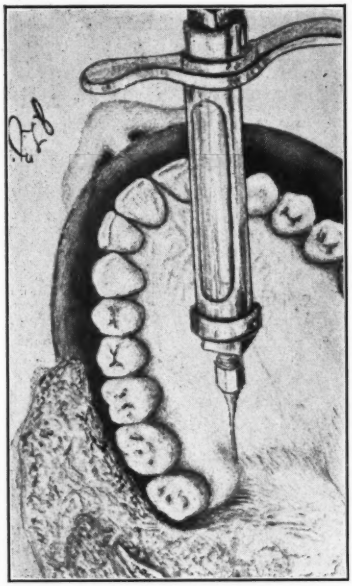

Fig. 16

Diagrammatic drawing showing the landmark for a posterior palatine injection. Note the depression where the needle is inserted. Just a drop of the solution is necessary.

Nasopalatine Injection

The syringe is held perpendicular to the palate, and the needle is inserted into the papilla posterior to the maxillary central incisors. The novocain solution should be injected very slowly, because a large amount of solution quickly deposited in the foramen will cause much pressure upon the nerves encased in this bony structure, thus producing severe pain. The needle should not be inserted too far or it will enter into the nasal floor and cause bleeding from the nose. Only a few drops of solution of novocain are required for a deep surgical anesthesia of the anterior part of the palate.

Infiltration Anesthesia

Infiltration anesthesia is well known to every dental practitioner. Since the maxilla is a very spongy bone, this method of anesthetizing the upper jaw is quite effective. A slight modification of the universally practiced technic of infiltration has been introduced by Guido Fischer. This consists in making the infiltration high in the buccal fold just at the point where the mucous membrane is reflected. The solution is then deposited between the bone and the periosteum. This type of injection is less painful, of longer duration, and offers less opportunity for injuring tissues and spreading infection.

The same precautions should be exercised as when giving the injection for block anesthesia, that is, the mucous membrane painted with solution of tincture of iodin and ether before the needle is inserted, the solution injected slowly without exerting too much force, and strict sterility observed.

ACCIDENTS DUE TO INJECTION

A needle too deeply inserted when injecting the mandibular nerve may occasionally produce temporary facial paralysis. It is caused by the anesthetizing of the facial nerve (Fig. 7). This condition, however, is not serious, requires no treatment and gradually disappears about an hour or so after the injection.

A punctured blood-vessel often produces a marked swelling of the face. This condition has been observed quite frequently in connection with tuberosity injections, the swelling appearing almost immediately after the injection. Since its cause is the blood that has escaped from an injured blood-vessel, which forms a hematoma, such injuries to blood-vessels and their sequelae can usually be prevented by keeping the hypodermic needle *close to the surface of the bone.*

Too prolonged anesthesia is a result of the injection of alcohol with the anesthetic solution. To obviate such accidents, syringes should be carefully emptied and washed of all antiseptic solution before being filled with novocain solution.

Injection of too hot or contaminated solutions, as well as the use of nonsterile instruments or inadequate preparation of the tissues before injection (painting with iodin, etc.), leads to very serious complications, such as abscess formation, necrosis, trismus and other sequelae of infection.

ARMAMENTARIUM FOR LOCAL ANESTHESIA

The appliances that may be used for inducing local anesthesia for performing the various surgical operations in the mouth may be numerous and varied, but they are by no means essential. All that is necessary is that the instrumentarium should be sufficiently complete to enable the operator to perform his work effectively. This usually depends more upon the condition of the articles than upon their nature or number.

The first requirement is that syringes should *not leak.* It makes little difference, if any, what type or make of syringe is used so long as it can be thoroughly sterilized by boiling. There is no particular objection to any kind of hypodermic needles. They may be of platinum, nickeloid, tempered gold or steel, and with or without guard, provided they are of the proper gauge and length and in perfect condition. The needle used for mandibular injection should be 1⅝ inches long, 21- or 22-gauge; and that for infiltration, tuberosity, posterior palatine and incisial injections should be of 23- or 24-gauge.

There is no objection to any special type of receptacle for preparing the solution nor is there any reason why a ready-made solution should not be used by those who prefer it, so long as it is not contaminated. A practitioner who prefers to make his own solutions will find very little difficulty in doing so, because everything in connection with the procedure is quite simple. The

specially graded 100 c.c. dropping bottles with a double-glass stopper or a Ringer flask makes the preparation of a normal physiologic solution easy. The addition of one Ringer tablet to each 10 c.c. of distilled water (cold) put into the bottle is all that is needed. The addition of one E novocain or procain tablet to each boiled c.c. of Ringer solution makes a 1% novocain solution, which is used for all types of injection.

While a sterile syringe may be placed into a solution composed of 70 parts alcohol and 30 parts glycerin and used when necessary without further sterilization, the needles should always be boiled before use. Since the slightest trace of alkali will decompose the adrenalin and to some extent the novocain, the boiling of hypodermic needles with other instruments sterilized in a soda solution is objectionable.* A very simple and effective method of sterilizing needles is described by Smith, who suggests boiling needles in a small-sized test-tube.**

Great care should be exercised to clean the syringe after it has been removed from the antiseptic solution, for any trace of alcohol left in the syringe and injected with the anesthetic solution will unnecessarily lengthen the period of anesthesia.

A list of all the articles necessary in the armamentarium for preparing the solutions is as follows: novocain or procain tablets, Ringer tablets, container for distilled water, flask for Ringer solution, boiling cap and cover, glass sterilizing jar, alcohol lamp, small-sized test-tubes, receptacle for rinsing syringes, bottle for iodin and ether, wooden applicators, thumb forceps, and wrench for tightening hubs on syringes.

355 East 149th Street

* Blair and Ivy, *Essentials of Oral Surgery.*

** Smith, *Block Anesthesia.*

Will Society Benefit When Dentistry Becomes a Specialty of Conventional Medicine?

By A. T. RASMUSSEN, D.D.S., F.A.S.S., La Crosse, Wisconsin

Whether dentistry of the future shall or shall not be practiced as a specialty of conventional medicine is a burning question occupying the minds of the best thinkers of both medical and dental professions. Prominent educators outside the field of medicine are giving serious thought to the same question. Naturally differences of opinion arise. Men of equal sincerity hold different views.

Two prominent schools of thought exist at the present time, namely, the stomatologic and the autonomist. The stomatologic school of thought believes in a single standard of medical education for all who practice the healing art in any of its branches, and that all specialties should be taught as graduate studies only.

The autonomous school of thought maintains that dentistry should remain separate and distinct from conventional medicine.

Other plans have been proposed, the most dangerous of which, I believe, is the one proposed by Dean Owre of the Dental School of Columbia University, which, briefly stated, provides for educating a few stomatologists and creating a large number of technicians who would be authorized to perform most dental operations, and which would eventually lead to licensing technicians and in the end would spell chaos.

Stomatology includes dentistry in its entirety. A sharp line of differentiation must be drawn between the true stomatologic program and any plan or proposition that would split up dentistry or create a class of licensed technicians.

Sharp language has been used by some in criticizing those of a different belief. I see no occasion for doing that. All that I have said, or hope to say, on the subject has been and will be said in a spirit of helpfulness and in the hope that when I am laid away, I may have helped make the world just a little better place for those who come after me. I have only the kindest feelings toward those who sincerely differ with me. I do not think of them as undesirable or a near nuisance.

Only by looking a problem like this squarely in the face, discussing it openly, frankly and gentlemanly, can we hope to solve it. Sentimentalism must not be allowed to enter into the picture. Any play upon the emotions or appeal to selfish instincts must be barred. Pride, tradition, partisanships or personal ambitions have no place in considering this question. The best interest of society as a whole is the only thing that can be considered, and in that light must the question be answered. A problem of so great importance to society as a whole requires calm deliberation, analytical thinking and careful weighing of all arguments in arriving at a proper solution.

The purpose of this article is to show that dentistry is an important branch of the healing art (if, indeed, that is necessary), that it has always been so, that only professional jealousies and politics caused it to be separated from conventional medicine, that thinking members of both medical and dental professions have continued throughout the years of separation so to consider it, and that the best interests of society demand that the two professions be again united and dentistry return to its mother profession, where it rightfully belongs, to the end that both the medical and the dental professions gain in knowledge and society benefit from a more intelligent practice of all branches of medicine.

Definitions of Medicine, Dentistry, Etc.

Before going any farther, let us get clearly in mind what we mean by the terms *medicine, dentistry, conventional medicine, stomatology, stomatologist* and *dentist,* terms that will be used frequently throughout this article.

Note the following definitions and the authority therefor:

Medicine: "The science which relates to the prevention, treatment and cure of disease."[1]

Dentistry: "The art, science and profession of a dentist, including dental and oral surgery, dentofacial orthopedia, exodontia, oral hygiene, orthodontia, pedodontia, periodontia, radiodontia and all other specialized branches of science dealing with the teeth and adjacent tissues."[2]

Stomatology: "Dentistry: the science which treats of the mouth, teeth and their diseases";[2] "That branch of medicine which treats of the mouth."[3]

Dentist: "A dental surgeon, an oral surgeon, a stomatologist, an odontologist, one whose profession is to treat the diseases of the teeth and adjacent parts and to replace lost dental and adjacent tissues."[2]

Stomatologist: "A dentist; one skilled in stomatology."[2]

By *conventional medicine* is meant the practice of medicine as it has come to be understood, and it is generally accepted to mean the healing art as practiced by one having met the educational requirements leading to the degree of Doctor of Medicine.

Admittedly, then, dentistry is and always has been a part of medicine, that is, of "the science of prevention, treatment and cure of disease," but separated from *conventional medicine* since 1840.

460 B. C.—1840 A. D.

From the very beginning of scientific medicine dentistry has been a part of it. Hippocrates (460-377 B. C.), the Father of Medicine, wrote of dental diseases and practiced what he wrote.[4]

Not until 1840 was dentistry split from the mother profession and then not as a matter of choice. Due to a lack of laws governing the practice of the arts and sciences, quackery ran rampant in the eighteenth and early decades of the nineteenth centuries. Imposters with little or no training

[1] *Winston Simplified Dictionary.*
[2] *Standard Dental Dictionary,* Laird & Lee, Chicago, Ill.
[3] *Lippincott's Medical Dictionary,* J. P. Lippincott Co., Philadelphia, Pa.
[4] Gies, William J.: Bulletin No. 19, Carnegie Foundation for the Advancement of Teaching.

were holding themselves out to the public as dentists, with the inevitable result that patients were not receiving the kind of treatment to which they were entitled in the light of the scientific knowledge of the day. Realizing this, members of the medical profession specializing in dentistry, stomatologists, sought to have dentistry taught in the medical schools.

In 1839 a group of dentists, prominent among whom were Chapin A. Harris, M.D., and Horace H. Hayden, M.D., conceiving their vocation as a specialty of medicine, endeavored to have dentistry definitely established as such and have it formally taught at the University of Maryand, which consisted at that time chiefly of the School of Medicine. Faculty members expressed the opinion that "dentistry was of little consequence" and rejected the proposal.

Much capital has been made of this act of the medical faculty of the University of Maryland by those opposed to the reunion of the two professions. History shows, however, that the said faculty was not actuated by high ideals. Gies puts it this way: "That the attitude of the medical faculty was affected somewhat by divisions among the Baltimore physicians in their support of competing local proprietary medical schools and by unfortunate personal influences seems to have been well known at the time. . . . Ignorance, intolerance and professional vanity achieved another of their woeful triumphs."[4]

DENTISTRY'S DIVORCE FROM MEDICINE

Because of actions unworthy of professional men, therefore, those high-minded dentists were compelled, against their better judgment, to establish separate professional schools for teaching this branch of the healing art. Accordingly they founded the Baltimore College of Dental Surgery in 1840. Note that it was a school of surgery. Thus began the history of dentistry as a separate profession.

It is worthy of note that all of the founders and first faculty members of that first school of dentistry were men with the degree of M.D., and that "of the fifteen members of the Board of Visitors named in the charter nine were physicians, and five were clergymen."[4]

Every act of the founders of the dental profession indicates that they considered dentistry a special branch of the general field of medicine. That they hoped for a union later we cannot doubt, for, from the beginning, courses in the fundamental subjects of general medicine were included in the curricula of dental colleges.

HISTORY REPEATS

It is not surprising that medical faculties of 1840 assumed the attitude that "dentistry was of little consequence," for history shows that the medical fraternity assumed exactly the same attitude toward surgery and other specialties.

During and following the medieval period "physicians regarded surgery disdainfully as mere handwork and surgeons as mere artisans and, therefore, as inferiors and harassed the progress of surgery by devices best known to the times."[4]

Not until surgeons had proved their

case, and the public had learned the importance of surgery, were physicians willing to acknowledge its rightful place in conventional medicine. Today we all recognize surgery as one of the very important branches of medicine, dental surgery not excepted.

Wider Knowledge Needed

Any one familiar with the facts must realize the tremendous advances that dentistry has made and appreciate the caliber of many members of the profession now and in the past. There are many dentists who, with or without the degree of M.D., have just as complete and extensive knowledge of all the medical sciences as members of the medical profession in high places.

These are the ones who have brought dentistry to the high plane it now occupies and are continually striving to lift it to higher levels. Such members of the profession agree, and readily admit, that the average dentist needs a broader training in biomedical subjects, although tradition and a sense of false pride keep some of them from admitting the necessity for a single standard of fundamental medical education for all, whether practicing one branch of medicine or another.

No thinking person can believe that the oral cavity, including the teeth, is going to be neglected continually by the medical profession as it has been in the past, being considered something apart from the rest of the body. Any one with even a reasonable amount of intelligence will agree that dentists of the future must have a broader knowledge of the whole body in health and disease than is true of the average dentist now or in the past.

Early history of the dental profession is replete with writings showing that thinking men of that day recognized the necessity of a general medical knowledge for the successful and intelligent practice of dentistry.

In 1844 Amos Westcott, M.D., D.D.S., in a paper to the American Society of Dental Surgeons wrote that the province of the dentist was more than being a "mere tooth-smith," and that "he who practices every branch of dental surgery safely must be sufficiently acquainted with the human system not only to trace given symptoms to their cause but also to anticipate all their possible tendencies."[5]

The American Society of Dental Surgeons in 1852 passed the following: "Resolved, that . . . *our branch of the healing art* . . . more than any other *specialty of medical science* requires the apparatus of such institutions (colleges) for the successful training of its students."[6] Note that dentistry was always referred to as a specialty of medicine.

B. Wood, M.D., also a dentist, in 1852 called attention to the necessity for a thorough medical training of dental students and the establishment of courses in medical schools. He continually warned against the separation of medicine and dentistry.[7]

In the opening paragraph of its report to the A. D. A. in 1874 the

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[5] Westcott, Amos: *Dental Education,* American Journal of Dental Science, 1844, Vol. V, No. 1.

[6] Editorial, American Journal of Dental Science, 1852, Vol. XIII.

[7] Wood, B.: *Collegiate Dental Education,* American Journal of Dental Science, 1852, Vol. XIII.

Committee on Dental Education, G. W. Keely, chairman, wrote as follows: "The branch of dental surgery is certainly a legitimate specialty of medicine. . . . Its practical processes should be controlled by the principles of medical science. Granting this, the basal elements of dental practice will be found in a thorough study of the whole physical organism."[8]

Many more might be quoted, but these are typical and will suffice.

THE MOUTH A PART OF THE BODY

Biologically considered, there is every reason why a dentist should have exactly the same fundamental training as every other practitioner of the healing art, and not one argument against it. From the standpoint of the person who is ill, there is every reason for demanding a broad general medical knowledge whether the disease manifests itself in the mouth or in any other part of the body. If one part of the body is sick, the entire body is ill. There are no exceptions to that rule.

All organs and structures involved in the practice of dentistry, whether such practice be viewed from the wide angle which it deserves or from the most narrow-minded point of view, are developed from the same embryonic tissues that other structures of the body are. They are governed in health and disease by the same biologic laws; the same blood circulates through and nourishes these structures as circulates elsewhere in the body; the same system of lymphatics drains the structures associated with the oral cavity and other parts, emptying eventually into the same blood stream, as from every other part of the body; the same nervous system that enervates and controls these parts reaches out and similarly enervates every other part; the same diseases affect the structures of the oral cavity and other parts of the body.

Pathologic findings are the same whether the structures of the oral cavity or other parts are involved. Inflammation, congestion, suppuration, necrosis and other pathologic processes are identical here and elsewhere. A malignant growth associated with the oral cavity is not essentially different from the same type elsewhere in the body.

Of course, there are diseases peculiar to this special field just as there are those peculiar to other parts. However, all are modifications of pathologic conditions common to all parts. The structures here are subject to invasion by pathogenic micro-organisms just as elsewhere.

All that I am saying applies to the teeth as well as to other hard structures. The teeth are not something apart from the rest of the body nor immune to the effects of general diseases or being the source of general disturbance, even though some dentists think that they can confine themselves to operations upon the teeth only and are so bold as to say that such operations do not come within the scope of the healing art.

Any disease has its effect within the mouth just the same as elsewhere, and, conversely, any disease of the oral cavity affecting the teeth or what-not affects the whole system.

A disturbed metabolism, the result of disease or deficient diet, affects the

[8] Keely, G. W.: *Dental Education,* TRANSACTIONS OF A. D. A., 1874.

structures of the mouth as promptly and as severely as any other part of the body. Metabolic disturbances have a profound influence on susceptibility or immunity to dental caries, periodontal diseases and other mouth lesions.

All of these things necessarily must be so, and are so, because the oral cavity with all of its associated structures is just a part of the whole organism and is in no wise independent of any of the others. All parts are absolutely interdependent one upon the other. There cannot be such a thing as a healthy individual with a diseased oral cavity or vice versa, any more than a healthy individual with a diseased stomach or gall-bladder.

If this is true—and I fear no contradiction—then any one who attempts to do anything with or to the structures within or associated with the oral cavity, whether giving prophylactic treatments or treating disease, giving professional advice or restoring lost organs, is tampering with the health and well-being of that individual. By no stretch of the imagination can it be otherwise. Therefore he should know the body as a whole and have the same training as others before being permitted to practice his specialty, in order to diagnose more intelligently or to treat the patients entrusted to his care.

Dental Medicine a Misnomer

So-called *dental medicine* or *dental therapeutics* is not different in principle from general medicine or therapeutics. In treating diseased conditions of the oral cavity the same fundamental principles of medicine and surgery are employed as in every other part of the body; the same drugs are used to inhibit or control infections or to stimulate cellular activity. Hyperemia is produced in the same manner here as elsewhere. The same methods are used for relieving congestion. Pain, as a result of disturbance within or about the mouth, is relieved and controlled by the same drugs or other methods as if the pain originated in other parts.

In other words, all medical treatment of whatever kind or description is based upon the same principles as in treating every other part of the body, the only difference being in the technic of application in some cases.

Surgical Principles Same as Elsewhere

All surgical procedures anywhere, including those within or about the oral cavity, are based upon the same biologic principles. Whether the operation consists of draining an abscessed appendix or a periapical abscess, the underlying principle is exactly the same. Nature's method of protection against the toxins from infections is identically the same whether the infection be in the abdomen or in the jaw.

Whether an incision is made into the soft tissues of the mouth or any other part of the alimentary tract or, in fact, any part of the body, the healing process is identically the same; the cellular structures respond to injury in the same manner. Whether the surgeon is operating upon the bones of the jaws or the pelvis, the physiology and the pathology of bone are the same, and the structures will respond in the same manner to the same treatment.

Technical difficulties in performing operations may differ, but a bone oper-

ation is a bone operation, no matter what part of the body is involved. An osteomyelitis of the jaw is in no way different from the same condition of the femur in so far as the pathology and methods of treatment are concerned, and the effect upon the general system will be identical. Operations upon the teeth, if intelligently done, are surgical procedures in every sense of the word just like other hard-tissue operations, modified, of course, to meet the peculiarities of the densest tissue of the body. A pulpectomy properly done and intelligently performed is based upon the same biologic and surgical principles as an appendectomy or the removal of a brain tumor, modified to meet the needs of the case as each has to be.

Incidentally, a pulpectomy, when properly done, is probably the most delicate and technically difficult operation ever performed on the human body and is done with the finest and most delicate instruments known to the surgical-instrument maker.

These things being true, I maintain that the same fundamental knowledge is necessary no matter what part of the body one undertakes to treat, that the best interests of society demand that in the future dental education shall include a complete training in the fundamental subjects of general medicine just as other specialists now receive, that dentistry be practiced as the specialty of stomatology, and that the subject of stomatology be given a place in the medical curriculum so that the general practitioner of medicine shall have at least a reasonable knowledge of the mouth in health and disease.

It is difficult to see how any one with a knowledge of the facts as they are can conscientiously oppose making dentistry a specialty of conventional medicine, for dentistry is and always has been a branch of medicine. In other words, dentistry *is* stomatology.

Stomatologists or dentists, if you prefer that term, treat diseases of the oral cavity, the near end of the alimentary tract, without a complete medical training. Other specialists of medicine treat diseases of the distal end of the same tract but *must take the complete medical course*. A more ridiculous situation cannot be imagined. The oral cavity, portal of entry to the entire system, an organ of many functions, the health and normal functioning of which, to a large extent, makes or mars the appearance and expression of the individual, would seem to require as intelligent treatment and care as the portal of exit from the digestive tract, which has only a single albeit an important function.

DENTAL TREATMENT IS SYSTEMIC TREATMENT

The argument sometimes raised that dentists are called on for and should give only local treatment is all wrong. Such a thing is impossible. Even such an every-day operation as the removal of a tooth in order to clear up an infection is done for its systemic effect, just as when the abdominal surgeon removes an infected gall-bladder. There can be no such thing as strictly local effects of any treatment. What affects one part affects all.

Dr. Osborne, Emeritus Professor of Therapeutics, Yale University School of Medicine, puts it this way: "The health of the mouth cannot be separated from the health of the body. . . .

The mouth is nearer to the body than are the eyes, the ears or the skin, and yet the oculist and aurist and dermatologist must have the degree of M.D. to practice these specialties. . . . Dentistry is in fact a branch of medicine. Consequently, in my opinion, the dental surgeon should be a graduate in medicine who has specialized in stomatology."[9]

"He would be esteemed a poor general who should know only the situation of the battle-ground, while he was ignorant of all the thousand avenues to and from it by which the enemy might retreat or be reinforced; and it is equally true that he who undertakes to meet and repel disease, the common enemy of health and life, should be familiar not only with its present aspect, the ground which it at the time occupies, but with all of its connections with other parts."[10]

Unity or Cooperation

One argument frequently put forth by those opposed to the Stomatologic Program is that Utopian proposition of better cooperation between medical men and dentists. Thank God, there are men in both professions big enough to cooperate, but unfortunately they are the exception rather than the rule in both professions.

Dentists complain that medical men act arbitrarily in "ordering" this or that done in the mouths of their patients. Frequently medical men are heard bemoaning the fact that they cannot get intelligent cooperation from dentists where the health of the patient is concerned. Both may be partially wrong; nevertheless such is the attitude of both, generally speaking.

The laity are beginning to realize this state of affairs, and the professions should see the handwriting on the wall, get together and remedy a bad situation before they are compelled by awakened society to do that which may not be the best. In the words of the late Theodore Roosevelt: "Nine-tenths of wisdom is to be wise in time and at the right time."[11]

Dr. Gies, a layman, in his report has this to say: "Owing to failure of both physician and dentist to recognize the fact that *the primary objectives of dentistry and medicine are identical* . . . to keep people well . . . there has been very little practical cooperation between bodies representing the two professions. . . . The teeth and their closely adjacent tissues are the only part of the body that have been thus far singled out as a special domain of remedial treatment. . . . These *deplorable conditions* occur in universities where dental and medical schools are closely associated. And yet, despite the prevailing medical lack of information regarding clinical dentistry, many physicians, often against the protests of the dentists of the patient concerned, peremptorily order extraction of particular teeth, sometimes of all remaining teeth, on the assumption, apparently, that a dentist's *judgment* cannot be right when it conflicts with the physician's *guess*. It is also true that the biological ignorance of many dentists, owing to deficient education in

[9] Osborne, Oliver T.: Personal communication.

[10] Westcott, Amos: *Dissertation on the Claims of Medical Science upon the Practitioner of Dental Surgery*, American Journal of Dental Science, 1844, Vol. V, No. 1.

[11] *Theodore Roosevelt — An Autobiography*, Charles Scribner's Sons, New York.

the medical sciences and in the requirements of oral medicine, often accounts for the disrespect of physicians for the views of dentists and frequently makes dental contributions to consultations on the health of patients clearly unreliable."[4] (Italics not in original.) He paints both with the same brush. I do not know how any one could place in a single paragraph any more conclusive evidence that the two professions should be reunited, and that dentistry should be one of the specialties of medicine, than he has in this quotation.

Says Dr. Gies further on in his report: "Antagonism between medicine and dentistry cannot be explained *on any basis of public interest or advantage* and has no justification in any sentiments that are worthy of respect. . . . It is plainly essential, from the point of view of public welfare, that if dentistry cannot become an accredited specialty of conventional medicine, it should be made the health service equivalent of an oral specialty of medical practice."[4] (Italics not in original.)

It is evident from the entire first chapter of the report referred to that Dr. Gies is satisfied that dentistry should be practiced as one of the specialties of conventional medicine, stomatology if you please, and that society will be benefited when such is the case.

GRADUATE STUDIES

It would be presumptuous on my part to say just what the training of a physician or specialist of any kind should be in all of its detail, but I say without fear of successful contradiction that the intelligent practice of dentistry, which is stomatology, requires just as thorough a training in the regular biomedical sciences as any of the other branches of medicine.

Only by such a medical training will the average dental student be able to grasp or realize the possible effects of his treatment, be it prophylactic, medicinal, dietetic, physical, surgical or restorative.

It follows, therefore, that dentistry should be made a specialty of conventional medicine and the technical subjects taught only as graduate studies. Such an arrangement in the future will place the profession as a whole on a higher plane of efficiency as guardians of the health of those who seek their services. That, after all, is the only angle from which we have a right to view the question.

LENGTH OF COURSES

Compare the length of the medical and dental courses with the proposed combined course of medicine and dentistry. Medical schools have an entrance requirement of two years' college work and a four-year course in medicine, a total of six years beyond high school. Dental schools have an entrance requirement of one or two years' college work and a four-year course in dentistry. There is good reason to believe that all will require two years in the near future. There are forty-two dental schools in the United States and Canada. Twenty have already lengthened their dental course to six years after high school, according to Lasby.[12]

[12] Lasby, W. F.: *Dental Education*, THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, October, 1930.

That the other twenty-two schools will soon do the same there can be no doubt.

In a recent address to the Personnel Council of Northwestern University, and later verified in a personal communication, Dr. Arthur D. Black, Dean of Northwestern University Dental School, told us that he hoped and believed that all dental schools would in the very near future require two years' college work as an entrance requirement. When that is done, all dental schools will have the same length of course as medical schools.

Eleven dental schools at present have from 50% to 70% of the curriculum consisting of non-dental subjects. Nearly 54% of the teachers in these same schools are teachers of non-dental subjects. The curricula of twelve other dental schools show from 30% to 50% non-dental subjects, while the percentage of non-dental teachers is in about the same proportion as in the first group.[13] If all of this does not point to a drifting together of medicine and dentistry, I ask, what does it mean?

The Stomatologic Program

Under the Stomatologic Program this would be quite changed. The medical subjects would all be taught in medical schools as undergraduate studies, while the strictly dental subjects would be taught only as graduate studies. From the standpoint of the university this plan should appeal, for it will eliminate much overlapping and duplication of effort and expense and at the same time provide more thorough training of students.

Whether or not the D.D.S. degree should be conferred upon completion of the graduate studies in dental schools I shall not discuss here. Suffice it to say that all specialties should be treated alike in this respect. What or how many degrees shall be conferred is of less importance than the kind of service rendered.

Dr. Winternitz, Dean of Yale University School of Medicine, has this to say: "I went to what was considered a fairly good medical school, but had I not known that man had teeth before I went there, I certainly should never have found it out in the medical school. We have lived nearly a hundred years in the most perfect example of an absurd condition that could possibly be conceived of, namely, that dentistry should be an entity separate from medicine."[14]

Henry S. Pritchett, President of the Carnegie Foundation for the Advancement of Teaching, a layman, says, "Dentistry is an important branch of health service and cannot longer be ignored in the training of general practitioners of medicine." In another place he refers to dentistry as requiring certain training not required in "*other specialties of medicine.*"[15] (Italics not in original.)

Recently the deans of many of our prominent medical schools have expressed themselves to the effect that dentistry should be made an integral

[13] Asgis, Alfred J.: *Two Contemporary Schools of Thought in American Dentistry, the Biomedical School and the Bio-engineering School,* read before the 19th Italian Stomatologic Congress, Venice, September 15-19, 1930.

[14] Winternitz, Milton C.: *Medical and Dental Education,* Clinical Medicine and Surgery, August, 1930.

[15] Pritchett, Henry S.: Preface to Bulletin No. 19, Carnegie Foundation for the Advancement of Teaching.

part of medicine and should be practiced as the specialty of stomatology. There can be no question that this is true, if viewed purely and simply from the standpoint of society's best interest.

William J. Mayo, at the dedication of Temple University Medical School buildings, October 15, 1930, had this to say relative to probable changes in curricula, "Perhaps the time will come when our undergraduate medical schools will turn out only general practitioners, who will not be taught the minutiae of the theories and methods they will not use when they are in practice."[16] This points to the day when all specialties will be taught as graduate subjects.

Many members of the medical profession, among them prominent medical educators, believe that the course of study in medical schools should be changed, and that the number of years for graduation could be reduced without in any way lowering the standards. By rearranging and coordinating the different courses of study and losing less time in vacations prominent educators have shown that at least one calendar year could be cut from the medical course.[17] Then, if medical education was so modified that all specialties were taught only as graduate subjects, a student could get even a better foundation training than at present and would be able to concentrate directly upon his chosen specialty when taking graduate work in preparation for any specialty.

[16] Mayo, William J.: Personal communication, Temple University Medical School (not yet published).

[17] Osborne, Oliver T.: *Medical Education*, MEDICAL JOURNAL AND RECORD, October 1, 1930.

COST OF DENTAL CARE

The cost of dental care has received too much publicity during the last few years. Some members of the profession have been holding out to society the idea that the fees for dental care are too high, and of course the rank and file readily agree to that. The strange thing is that usually those same fellows are the ones who complain that dentistry is not sufficiently remunerative for the time, effort and expense put forth.

Dental treatment is not a luxury which need be apologized for. It is a health service, a branch of medicine, of equal importance with any other, the cost of which must not be lowered or kept low at the expense of the quality of service rendered.

Granting, for the sake of argument, that the cost of dental care will be higher under the Stomatologic Program, how much difference will there be, based upon the additional expense of training?

Let us be liberal and allow two years' additional time at $1000 per year and expenses of $1000 per year, and we have an additional investment of $4000, upon which the investor is entitled to reasonable returns plus retirement of the principal.

Assuming that the average practice is for a period of twenty-five years, it will require an increase in fees amounting to $280.00 each year in order to retire the original investment, together with 6% interest during the time it was invested.

Is there any dentist so foolish that he would be unwilling to advance $280.00 a year for the additional finan-

cial possibilities that would be his by virtue of a complete medical and dental training, over and above his present possibilities with only a dental training? Certainly not.

Economics of Stomatologic Program

Economically speaking, then, from the standpoint of the stomatologist or dentist, if you prefer that term, the additional expense of his college training when dentistry is made a specialty of conventional medicine will be a good investment, one that will bring him large returns and the value of which will not fluctuate with the stock market.

But we must view the subject from the standpoint of society, whom we serve. Assuming that under the Stomatologic Program society would be called upon to pay increased fees amounting to $280.00 per year, as shown above, then based on a $5000-a-year practice the increase would amount to 5.6%.

Patients will certainly be better off financially by paying the slightly increased fee for the advice and treatment of one who has a general knowledge of the whole body in health and disease than to be obliged to pay two or more fees because of the limited knowledge provided by the incomplete training given in the medical sciences in dental schools.

People will gladly pay higher fees for better service. I have asked quite a number of my patients whether or not they believe that dentistry should be practiced as a specialty of medicine, and without exception their answer has been that they believe it should.

Outside of dentistry people are not looking for the cheapest doctor they can find, but they want the best. Raise the standard of quality of service, and fees will adjust themselves without any great difficulty.

This question of economics, when actually reduced to dollars and cents, is not the bugaboo that many would have us believe.

Increased Cost of Luxuries

The average American family spends more for automobiles than for the care of their health. This was not so a few years ago, but when the automobile came we did not hesitate to assume the additional expense, because we found it added to our efficiency, comfort and pleasure.

Likewise radio added much to the expense of the average American family, but was eagerly grasped because it is an improvement over older methods.

While the modern electric vacuum cleaner costs much more than a broom, American homes are largely cleaned by this improved method in spite of the increased expense. We toast our bread and bake waffles, light our houses and brew coffee, wash and iron our clothes or warm the bed with modern electric appliances, notwithstanding the fact that the expense is much higher than older though less efficient methods.

Places of amusement spend millions in beautifying and making more attractive their playhouses or what-not. Apparently the cost of amusement gets little consideration, and society does not go into rebellion against that. No, I do not think that the additional cost of dental care under the Stomatologic Program will be an important factor in the long run. On the other hand, I believe that such an arrangement will be conducive to a higher type of indi-

viduals entering the profession, resulting in a better health service to society, whom we serve.

THE DENTIST'S DEFINITION OF DENTISTRY

Were a man from Mars given an armful of society programs of organizations such as the American Medical Association, American Dental Association, societies of ophthalmologists, otolaryngologists, dermatologists, neurologists, pathologists, proctologists, pediatricians, obstetricians, orthopedists, anesthetists, orthodontists, oral surgeons, periodontists, pediodontists, prosthodontists or county or district dental societies without number, he could never gain from a study of them that there were two groups, namely, medicine and dentistry. On the other hand, he would soon learn that they were all engaged in the same thing, namely, the preservation of health and treatment of diseases of the human body, and that some groups give special attention to certain parts of the body. By no stretch of imagination could he find a place to draw a line dividing these groups into two professions.

The program of the last meeting of the American Dental Association announced the subjects of ninety-eight papers before the scientific sections. Forty-nine of these were on strictly medical and surgical subjects—just 50%.

Medical and surgical subjects do not lend themselves easily to table clinics and yet, of the 429 listed, seventy-two were of this character—16.8%.[18]

[18] Preliminary program, Annual Meeting of A. D. A., THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, June, 1930.

The official program of the Chicago Dental Society, February, 1931, lists twelve scientific exhibits, ten of which were entirely on biomedical, surgical and health subjects. The other two were divided into twelve subheads, seven of which come under the same classification. The scientific exhibits were almost 100% medico-surgical in nature.

Thirteen moving pictures were shown, ten of which dealt with general health subjects, two more indirectly so, while one was strictly a dental subject. Eighty per cent or more dealt with general health subjects.

A total of ninety-two papers was announced, thirty-seven of which were on strictly biomedical or surgical subjects. This is better than 40% of all the papers presented and does not include the papers on the subject of orthodontia, which in itself is a biologic study.

Ten lecture clinics were announced, of which three were on medico-surgical subjects—30%.

One hundred thirty-five table clinics were listed. Twenty-eight of them, or nearly 21%, were on medical or surgical subjects, notwithstanding the fact it is difficult to give table clinics on such subjects.

Analysis of almost any representative dental society's program would show about the same proportion as the foregoing. Consciously or subconsciously, therefore, the members of the dental profession who are doing things recognize the fact that dentistry is a part of medicine. They are thus defining dentistry as *stomatology*.

Am I wrong? If so, then all who arrange these programs and those pre-

senting the subjects referred to are wrong.

Am I wrong? If so, then why in the name of common sense clutter up your programs with a lot of stuff that does not concern us?

Am I right? Certainly. Then why not make a clean breast of it, adopt the Stomatologic Program and demand that graduation from a reputable medical school be the scholastic requirement for taking up the study of our specialty in the future, that dentistry be made in fact a specialty of conventional medicine? By so doing we shall bestow a favor upon those who in the future will practice our profession, by giving them proper training before entering their life work, for certain it is that dentists of the future cannot assume the same attitude toward general medical subjects that the average dentist does today any more than the medical profession can continue to ignore the mouth and teeth as something apart from the rest of the body. The dentist who thinks that he can confine the effects of his treatments to the teeth is woefully lacking in knowledge of the biologic sciences, and dentistry based upon such a premise will go down to oblivion before the march of scientific progress.

Is the dental profession, after having reached the high place that it has, going to keep abreast of the scientific procession by taking its place among the other specialties of medicine and doing its full share in the preservation of the health of the human race, or shall the procession be allowed to march past, relegating the dental profession to the status of mere mechanical technicians?

No, the dental profession has advanced too far along scientific lines to permit any retrogression. It has made wonderful progress in the past and must continue to do so. The next great step forward is marked out for it. Those entering the profession in the future must possess a general medical training. There must be a reunion with our mother profession in order that practitioners of all branches of medicine in the future shall be better equipped to safeguard the health of society intelligently.

The practice of the healing art is not static. It must go either forward or backward. Dentistry is going forward.

211-212 Linker Building

The Metric System for General Anesthesia

By ROBERT FRIEDMAN, D.D.S., New York, N. Y.

When inducing anesthesia, we administer the gases by volume. If the correct volume can be determined, the flow of these gases can be so regulated as to be fed in the required percentages in relation to the volume given.

During respiration the volume of air inspired and the volume of the gases expired are measured either in cubic centimeters or in liters. One liter is equivalent to 1000 c.c. or 1.056 quarts, wine measure. To apply these measurements, we must know the physiology of respiration.

The Physiology of Respiration

We find that the average amount of air that is expired after a quiet inspiration is 500 c.c. or ½ liter. Of this amount 140 c.c. of air fills the dead spaces consisting of the anatomical passageways. We therefore find that 360 c.c. of air reaches the lungs for physiological purposes during each inspiration.

There is an average number of 18 inspirations each minute. To allow for stimulation, losses due to mouth-breathing and faulty inhaler adaptation, I have allotted two additional respirations during each minute. Therefore the following equation results:

$$360 \text{ c.c.} \times 20 = 7200 \text{ c.c.}$$

The average amount of gases to be delivered each minute to the average patient is 7200 c.c. or 7 liters and 200 c.c. The determination of this volume has been obtained from practical experience.

To apply this to our work, we have only to predetermine the anesthetic gas and the supporting gases to be used and then we can ascertain the correct proportions of each gas to be delivered to the patient.

Example No. 1

10% of 7200 = 720
5% of 7200 = 360
85% of 7200 = 6120

7200 Total

Quantities for Ethylene Anesthesia

From practical experience it has been found that 900 c.c. of oxygen is enough to keep the patient's color normal, that 300 c.c. of carbon dioxid is enough to stimulate and maintain regular rhythmic respirations, and that the balance, 6000 c.c. or 6 liters of ethylene, is required to produce and sustain a normal anesthesia. By giving these quantities the patient is receiving approximately the following:

Example No. 2

12.5% of 7200 c.c. = 900 c.c. of oxygen
4.2% of 7200 c.c. = 300 c.c. of carbon dioxid
83.3% of 7200 c.c. = 6000 c.c. of ethylene

I therefore adjust the apparatus to deliver 900 c.c. of oxygen, 300 c.c. of

carbon dioxid and 6 liters of nitrous oxid. After several respirations the apparatus is set to deliver 6 liters of ethylene, and the nitrous oxid is immediately discontinued. If I find that the patient is not of the average type, the quantities of the gases are adjusted accordingly, so as to deliver more or less of each gas as the requirements become evident in accordance with the anesthesia. (See the accompanying chart.)

Quantities for Nitrous-Oxid Anesthesia

When nitrous oxid is the anesthetic of choice, a similar technic is followed, except that the percentages differ. The maximum amount of oxygen that can be given to induce and maintain a normal anesthesia should not exceed 8%. The minimum quantity must not fall below 3% or asphyxiation will occur. I should advise an average of oxygen 5%, carbon dioxid 3%, and nitrous oxid 92%.

Example No. 3

5% of 7200 = 360 c.c. of oxygen
3% of 7200 = 216 c.c. of carbon dioxid
92% of 7200 = 6624 c.c. of nitrous oxid

My technic is to commence the anesthesia by giving 200 c.c. of carbon dioxid and 6500 c.c. of nitrous oxid. After several respirations I give the balance in oxygen, or approximately 500 c.c.

If the patient requires more or less of any of these three gases, the quantities are adjusted so as to deliver the necessary amounts as the symptoms of anesthesia develop.

The same rule holds good when giving nitrous oxid anesthesia as when giving ethylene anesthesia, that is, increase or decrease the volume of the gases in accordance with the needs of the patient.

How to Determine the Quantities in Gallons

Some machines are constructed to register the delivery of the gases in gallons per hour. When such a machine is used, it becomes necessary to determine the quantities of the gases to be given to the patient in cubic centimeters and liters and then transform these determinations into gallons to be given each minute. When this is ascertained, it is a simple proposition to know the quantities in gallons per hour. After the total is known, it is only necessary to figure percentages and set the apparatus in accordance with the determinations.

There are 3,785 c.c. of gas in each gallon.

Example No. 4

3785 c.c. × 2 = 7570 c.c.

This is very near our predetermined quantity of 7200 c.c. per minute. We can therefore anticipate administering two gallons of our combined gases each minute. In one hour we will then deliver 120 gallons of gases.

Example No. 5

5% of 120 = 6 gallons of carbon dioxid per hour
15% of 120 = 18 gallons of oxygen per hour
80% of 120 = 96 gallons of ethylene per hour

FRIEDMAN SYMPTOM CHART FOR OXYGEN, CARBON-DIOXID, ETHYLENE ANESTHESIA

Light	*Normal*	*Profound*
I. Respiration 1. Shallow. 2. Labored. 3. Irregular. Corrective: Increase the amount of carbon dioxid slightly.	I. Respiration 1. Full. 2. Deep. 3. Regular.	I. Respiration 1. Labored. 2. Full and shallow. 3. Irregular and spurty. Corrective: Decrease the amount of carbon dioxid.
II. Muscular Reactions 1. Not completely relaxed. 2. Will move legs, arms and eyelids.	II. Muscular Reactions 1. Legs completely relaxed. 2. Arms relaxed completely. 3. Eyelids relaxed completely.	II. Muscular Reactions 1. Jactitation. 2. Clonic contraction. 3. Retching.
III. Regurgitation May occur.	III. Regurgitation Not present.	III. Regurgitation Generally present, due to reverse peristalsis.
IV. Eye Movements 1. Eyeball moves from side to side. 2. Pupils contracted. 3. Reacts to light.	IV. Eye Movements 1. Eyeball moves from side to side. 2. Pupil normal. 3. Does not react to light.	IV. Eye Movements. 1. Often eccentric. 2. Pupil wide open. 3. Lid sometimes open, giving a wide stare.
V. Color of Skin 1. Normal. 2. Smooth. 3. Pink. Corrective: Increase ethylene. If necessary, give about 15 drops of ethyl chlorid.	V. Color of Skin 1. Normal texture. 2. Smooth. 3. Pink or pale. 4. Moist because of slight sweating. Corrective: None.	V. Color of Skin 1. Becomes dusky. 2. Blue or livid. 3. Wrinkled. 4. Wet and clammy. Corrective: Decrease ethylene; increase oxygen.

From practical experience it has been found that when we deliver these amounts of the various gases, a normal anesthesia is quickly induced. However, again let me reiterate that the patient is the only index by which to be guided when determining the total quantities to be given.

SUMMARY

In the final analysis the patient is the indicator of the depth or of the superficiality of the anesthesia. The patient is the indicator as to the proper color to be maintained and as to the correct amount of carbon dioxid to be given.

Regulate each gas so as to obtain a good, smooth, profound and uneventful anesthesia. By employing the metric system it is possible to know the quantities of each gas that is being given to each patient. It is possible to determine the percentages of the various gases in relation to their volume. It is possible to regulate the quantities of

each gas so as to obtain the maximum results with the least effort.

If the anesthetist employs an apparatus that does not designate the cubic centimeters or liters flowing each minute or the number of gallons flowing each hour, he can have this determined for him by the manufacturer of the machine in use. It will be necessary only to transform the figures obtained to a working basis as given in the various examples herein stated to ascertain the data desired.

354 East 149th Street

[SPECIALIZED CIVILIZATION]

It would seem as if organized society were bent on widening the gulf which separates men from one another, on confining its members within more and more restricted fields. In the desire to secure the highest efficiency of service, society delights to honor the great scientist, the great engineer, the great surgeon, the great captain of industry, who has become most expert in the technic of his craft, irrespective of his development as a man. If he insists on devoting a portion of his energy and time to becoming acquainted with the story of the human race and their achievements in art, literature and science, he does so at his own peril, for all his time and all his energy are inadequate for the business of perfecting himself in his craft. I shall not labor the point at greater length, for all men are familiar with the fact and a multitude are in dumb, if futile, rebellion against it.

—WALLACE.

Light Supreme

By A. L. PARSONS, D.D.S., Cleveland, Ohio

During every winter we have an epidemic of "flu" which is accentuated by the lack of sufficient sunlight, and which also makes us languid and depressed until spring, when we again have the sun close to us and can feel the benefits of those warm rays. Few of us are fortunate enough to have sunlight on tap and so we must wait for the natural sun to come from below the equator, for the sun is supreme and is the highest power given to all living and growing things on the earth.

Those unfamiliar with the sun's rays will see in the rainbow a beautiful demonstration of the visible colors of the spectrum. These different colors are produced by the refraction and reflection of the various wave-lengths. The sun as we see it appears white, but it is really a combination of seven colors blended into one. As all of these colors have their own individual wave-lengths, they enter the raindrops at their various velocities and are reflected back as individual colors of the rainbow.

Between the visible violet and the x-ray are the invisible ultra-violet, divided into the near, middle and far, and the Schuman and Lyman bands, ranging from 500 to 3900 A. U. in length, although the bactericidal ultra-violet has a range only from 2900 to 3100 A. U.

The shortest wave-length known is the cosmic ray, which as yet has no known use. In Vienna recently Dr. V. F. Hess made the announcement that in the field of the natural cosmic ray he had discovered a tremendous penetrating power, one ten times as penetrating as the strongest radium rays, piercing 80 inches of lead plate with a loss of only one-half of its intensity. He further states that these wave-lengths are probably one hundred millionth that of radium.

At the opposite end of the spectrum, beyond the visible rays, are the invisible thermic waves, which are the near, middle and far infra-red, ranging from 7700 to one trillion A. U. in length. Next in order is the high-frequency or wireless or diathermy wave, which is indispensable for successful dental heliotherapy, having a wave-length of from one trillion to three trillion A. U., or about thirteen miles.

The infra-red wave, while of the same general character as the ultra-violet, differs in its wave-length. The ultra-violet, as a cold wave, is very active as a bone-builder, is powerfully bactericidal and is a dilator, a stimulant and an anodyne, and some authorities claim that it produces Vitamin D. The infra-red ray is very hot, possibly slightly bactericidal, also a dilator a stimulant and an anodyne. The ultra-violet has only a slight penetrative power, while the infra-red is very deep. Yet, while both of these wave-lengths will produce some parallel results, they are brought about by opposite means. Both the ultra-violet and the infra-red have very soothing effects.

The wireless or high-frequency current has the same general character as the ultra-violet and all of the other waves, but it also differs in wave-length. This wave is very valuable in the removal of abnormal growths and for producing deep erythema. Fever is nature's defense against the invasion of bacteria, and in this wave we have a means of producing a false fever of any depth desired. Bacteria can survive a cold temperature, but they cannot survive the temperature created by the diathermy wave-length. Some bacteria will be destroyed readily, while others may offer some resistance, but nevertheless they will yield.

Proliferative Gingivitis

Some cases of gingivitis are very slow to respond to the ultra-violet wave-length or any of the old and tried modalities. Proliferative gingivitis is one of the most persistent of all of the varieties. This condition occurs only during pregnancy, and, due to the peculiar systemic condition of the individual patient, the gums will become very red and highly inflamed, developing tumorous growths or neoplasms on the palatal or labial or buccal surfaces, or both, at the same time. These neoplasms may grow so large that they will almost completely cover an entire tooth. A slight pressure may start a hemorrhage, and to remove these growths by surgical means would necessitate the loss of a considerable amount of blood, as the gums are very vascular at this time. The results are also uncertain, as the growths would undoubtedly return within a few weeks. The only sure way of removing these growths with the least possibility of a recurrence is by fulguration, using the direct Tesla current from the diathermy machine, operating on the high-frequency or wireless wave-length. This operation is bloodless, and the capillaries are thoroughly sealed and the tissues so thoroughly sterilized that there is little liability of a recurrence.

The Tesla current is very hot and is applied through a fine-pointed instrument. The spark leaves the point of the instrument in the form of heat energy and passes into the tissue to be removed, causing complete dehydration or drying up. The growth may be entirely removed at the time of the operation or may be allowed to slough off, which will require two or three days. The growth may be removed to any depth desired to round up the contour of the gum surface. The wound will heal very rapidly and leave no scar. Some soreness may be experienced for a few days, but even that may be eliminated and the healing hastened by applying the ultra-violet ray immediately after the fulguration.

Now to reduce general gingivitis. Electrodes of the Perlman type, made in three sizes, will comfortably fit the buccal and labial surfaces of the gums. Being very flexible, they are easily and perfectly adjusted. The patient is seated on an autocondensation pad, the wires connected to the pad and mouth electrodes, and the current allowed to pass from the diathermy machine in a given quantity until the gums feel the required heat, which is held constant during the treatment. The heat is held just under the tolerance of the patient. As the current crosses in its passage from the larger to the smaller electrode,

the greatest heat is generated at the point of intersection of the waves, so that not only the gums are heated but the bones as well, the heat lasting for several hours. If by any chance a blister or burn should be produced, which is naturally very painful, an application of ultra-violet ray under pressure will have an almost immediate effect in relieving the pain, as it is a powerful sedative in such a case as well as a specific.

Proliferative gingivitis, like many other oral infections, is undoubtedly aggravated by intestinal disturbances which must be corrected by diet. Many things may occur during pregnancy which would not occur at other times. During the embryonic state the skeleton is cartilaginous, but after birth this cartilage gradually becomes filled in with calcium and phosphorous salts and eventually becomes bone.

During the embryonic state it is necessary that the mother retain a normal calcium balance or else the derangement may cause either one or possibly both to suffer. During the latter half of pregnancy there is a great demand upon the calcium supply, and there may be a great falling off of the calcium content of the blood, which will vitally affect the quality of the bone and tooth structure of both the mother and child. The osteoblastic cells are always busy filling in the calcium and phosphorous salts and converting the cartilaginous skeleton into solid bone.

It is a well-known and acknowledged fact that the ultra-violet wave-length will induce and maintain a perfect calcium balance. As in the case of rickets, both artificial and natural ultra-violet will induce calcium metabolism and cause a complete change in the bone structure. Likewise in the case of pregnancy calcium and phosphorus metabolism is induced, thus producing strong bone in the offspring and preventing a deficiency in the mother.

ULTRA-VIOLET STARVATION

Under an ultra-violet starvation the osteoclasts are always ready to tear down solid healthy bone structure to supply the needs of other parts, and there are no other bones in the human body which can disintegrate so rapidly as the bones in which our teeth are embedded.

Now, how does the ultra-violet wavelength enter the body? The penetration is very slight, possibly only skin deep. Through extensive experiments Luckiesh and Pacini have determined that the effect reaches every organ, gland and cell of the body through its stimulation of the sympathetic nervous system, the effect stimulating these organs, glands and cells to greater activity. They further state that it is only the action of the ultra-violet wavelength which can cause any chemical change, but there seems to be no definite knowledge as to why such chemical changes should take place.

Ultra-violet, in addition to the diet agitation of today, will eventually be the basis of a more successful preventive dentistry.

There is no necessity for the children of today to suffer from diseases of darkness along with winter depression, fatigue or exhaustion. Their little bodies are very quick to respond to ultra-violet radiation, which replenishes

the calcium and phosphorous salts. Children lacking in these salts are fit subjects to contract almost any disease which may be prevalent at different seasons of the year. Adults, too, are easy victims for disease germs when the calcium and phosphorus are markedly below normal.

During the "flu" epidemics it is well to keep the calcium up and the alimentary canal in good working condition in order to prevent fatality.

Blue-eyed, blond children, having very thin skin, should be handled carefully when being treated with ultra-violet, as they have very little pigmentation, which is governed by the thyroid gland. However, a dark-eyed blond will stand more radiation, as this type is influenced more by the adrenal gland, which has the power to produce brown pigment. A dark-eyed brunet, being entirely controlled by the adrenal gland, will stand a great deal of radiation without the slightest inconvenience, while the light-eyed brunet will show more redness but no soreness, being governed by both glands, with the adrenal predominating. Pigmentation does not mean that there will be less absorption of ultra-violet, for the tissues can really stand a longer exposure.

Physiotherapy is destined to be the greatest of all modalities in the treatment of bodily ailments. The dental physiotherapist of the future will not stop at the therapeutic ultra-violet wave-length but will be required to have a working knowledge of the thermic waves, embracing the infra-red and wireless or high-frequency.

The equipment for this gamut of wave-lengths will be a water- and air-cooled quartz mercury arc or a carbon arc for oral and general radiation, the infra-red lamp both large and small for general and local use, and a diathermy machine for oral and facial application.

With the wave-lengths of the visible spectrum already appearing upon the therapeutic horizon, it is only a matter of time when they will be recognized by the dental physiotherapist along with the ultra-violet, the infra-red and diathermy.

834 Rose Building.

An Outline of Dental Pathology

By NATHANIEL FREEMAN, D.D.S., New York, N. Y.
Adjunct Dentist, Mount Sinai Hospital and Montefiore Hospital.

IV

SPECIFIC INFLAMMATIONS

Under specific inflammations all infectious diseases caused by specific organisms are considered. These include especially syphilis, tuberculosis, pneumonia, typhoid, etc.

SYPHILIS (LUES)

This is a chronic infectious disease caused by the *spirochete pallida.*

The spirochete pallida is a long, slender, spiral organism averaging in length from 6 to 15 microns. It stains with difficulty and very faintly, hence the name *pallida.* The spirals are very sharp and regular and average from eight to fourteen in an organism. The organism has three motions: (1) a rapid rotation on the long axis, (2) a progressive motion by bending, and (3) a lashing and twisting motion.

It has been found convenient to consider the lesions of syphilis as occurring in three stages, *primary, secondary* and *tertiary.*

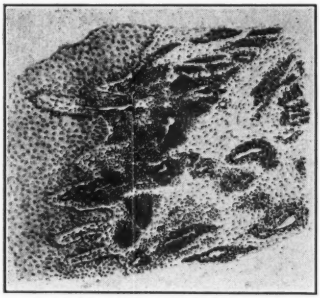
The primary lesion or chancre.

At the point of inoculation, in a few weeks, a focus of inflammation develops, the initial sclerosis. This may be in the form of a papule or vesicle, and in either case erosion of the surface is apt to occur together with a hardening of the deeper tissues leading to the so-called *chancre.*

The chancre is usually a single, indolent, small, round, superficial ulcer or excoriation. It has a button-like, indurated base. It is usually

Chancre on the lip.

located on or about the genitals, but may be on the mucous membrane of any of the orifices of the body or anywhere on the cutaneous surface. Usually in connection with or following the development of the initial lesion there is a hyperplasia of the lymph nodes belonging to the anatomical area of the lesion, which become hard and swollen.



Section from a primary syphilitic nodule of the mucous membrane of the mouth showing collections of cells about the blood-vessels in the submucous tissue.

The chancre is practically painless, as are also these palpable lymph nodes.

The secondary stage.

Symptoms—Eruption.

The appearance of the eruption is the final evidence that syphilis has become established as a systemic disease. This eruption, which appears on the mucous membranes of the mouth as well as on the skin, is of symmetrical distribution and varies from a few pink spots on the front and back of the trunk to an extreme pustular eruption resembling a severe case of small-pox.

Mucous patch.

On the mucous membrane of the mouth circumscribed or diffuse superficial, gray, opal-like thickenings appear known as *mucous plaques*. These patches contain many spirochetes and are very infectious.

Other symptoms of secondary syphilis are those of a general infection of subacute intensity.

Systemic symptoms.

In addition to the eruption, the symptom complex may include fever, rheumatoid pains, insomnia, anemia, more or less cachexia and other evidences of toxemia. As a rule, in secondary syphilis none of the symptoms is of a character that would of itself cause alarm.

The secondary stage of syphilis has no sharply defined duration.

It may be measured by a few months or extend over two or three years.

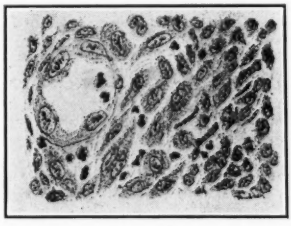
Syphilis — secondary stage. Papulo-pustular eruption.

The tertiary stage.

All the symptoms of tertiary syphilis are due to the activity of localized foci of syphilitic infection. These manifestations represent two types of lesions: (1) the *gumma* of syphilis and (2) a diffuse sclerosis or scar-tissue formation following plates on thin areas of gummatous infiltration. A *gumma* is a mass of inflammatory tissue from the size of a pinhead to that of an olive or larger. It is usually round or oval, or disc-shaped. It

is at first a firm, vascular tumor, but it soon softens, breaks down at the center and, if opportunity occurs for it to open on a free surface, forms an ulcer. In any case it is followed by scar tissue, which replaces the normal tissue in which the gumma occurred.

The symptoms of tertiary syphilis may be direct and confined to the lesions or may include a wide variety of indirect manifestations.



Newly formed tissue in syphilitic inflammation, showing swollen endothelium in a small blood-vessel.

The gravity of the symptoms of gummas depends altogether on their location. A gumma occurring in the skin produces a characteristic ulcer, the symptoms of which are local. At the other extreme a gumma occurring in the brain may produce all the symptoms of a brain tumor. No tissue in the body is exempt from the lesions of tertiary syphilis.

Syphilis of the central nervous system.

This is of frequent occurrence. It may be due to gummatous lesions or to sclerotic processes producing degenerative changes. The most important forms of nervous disturbances are paresis, or softening of the brain, and tabes, or *locomotor ataxia.* In the latter the sensory nerves in the spinal cord controlling the lower extremeties are affected, resulting in that individual walking in a characteristic uncertain manner.

Hereditary syphilis.

This is a condition in which syphilis is transmitted to the fetus *in utero.* A healthy child born of a syphilitic mother may acquire syphilis at birth or soon after. Syphilis so contracted is acquired syphilis and presents the usual manifestations of acquired syphilis.

Characteristics.

Excepting the initial lesion, hereditary syphilis may produce any manifestations of the acquired disease. It has skin lesions, lesions of the mucous membranes and lesions of the deeper structures analogous to those produced by acquired syphilis.

Hereditary syphilis may become active during the development of the fetus or its first manifestations may appear at varying times after birth.

When the fetus is infected very early in its development or at any time before the third or fourth month, the death of the fetus from syphilis is very likely to occur and a miscarriage to take place at from the third or fourth to the seventh or eighth month.

Symptoms and course.

If the attack is not so intense as to cause the death of the child, it may be born with syphilis active at the time of birth. The mani-

festations are usually of the extreme type. The skin and mucous membranes are extensively involved in the syphilitic eruption. Severe rhinitis and laryngitis occur. The child has purulent nasal discharge; it snuffles and on account of the nasal obstruction breathes and nurses with difficulty. The child is emaciated and cachectic. The skin is sallow and falls in wrinkles over the thin limbs and body, and the face has the pathetic, anxious appearance of an old man.

Some children who survive early congenital syphilis may later show very little traces of the disease. Usually, however, they are far below normal. During infancy their nutrition is poor, they do not gain rapidly, they begin to walk late, and they are small. At the period of second dentition or at puberty further evidences of perverted nutrition are apt to appear. There is a syndrome usually associated with hereditary syphilis that is known as *Hutchinson's triad,* which is comprised of *deafness, interstitial keratitis* and *Hutchinson's teeth.* Other distinguishing features are the *saddle nose* and *rhagades,* which are fine, radiating lines surrounding the lips.

Hutchinson's teeth.

The deciduous teeth of hereditary syphilitics sometimes show defects of development, but this is by no means common. The characteristic failure of development in the teeth usually occurs in the permanent set. It is most marked in the maxillary central incisors. The teeth stand apart, are peg-shaped, smaller than normal, with a crescentic notch in the incisal edge which extends on to the labial side of the tooth.

Histopathology of syphilitic lesions.

The syphilitic lesion is histologically a granuloma, a mass of granulation tissue, such as is produced by numerous infectious agents which elaborate mildly irritating toxins that cause a correspondingly slow reaction in the tissues. The lesion is composed chiefly of lymphocytes, endothelial cells and fibroblasts. It is characterized also by its highly vascular structure and by the extreme involvement of the blood-vessels in the process. Unlike ordinary granulation tissue, it is unable to become organized into healthy scar tissue. It undergoes either degeneration or necrosis. Undoubtedly the tendency to degeneration and necrosis in gummas is due to the involvement of the blood-vessels in the syphilitic process and the consequent interference with the blood supply.

A syphilitic infiltration may be absorbed when small, with unappreciable alteration in the tissues in which it was situated, or it may result in distinct scar-tissue formation at the site of the lesion.

5 East 57th Street

(*To be continued*)

Dentistry Today

By ARTHUR G. SMITH, D.M.D., Peoria, Ill.

II

No stream can rise higher than its source!

No actuality is ever quite the equal of the Dream which preceded it, yet each product of our hands very measurably represents the ideals which were in the mind at the time each piece of work was undertaken. Therefore, if actual results present in the mouths of our Patients cause us to shrink back in dread from the appraising eye of competent scrutiny or the pitiless revelations of the X-Ray, *there must have been something wrong with our Dream or our Ideal* when that particular piece of work was started!

Results in Dentistry are definite!

Even the Practitioner of rather limited experience can quite accurately tell the end of any usual line of procedure. It is not our inability to forecast accurately the Dental Events of Future Years for our Patients and our Services which causes most of our operative shortcomings, but rather our unwillingness to project our trained and competent judgment into those years and then honestly and unflinchingly square our recommendations and our practices with what we see there.

Teeth should last a Lifetime!

So, therefore, should those restorations of their lost volumes and surfaces which we place in them to repair any damage sustained. Results of this degree of permanence are no idle dream! In the modest little Mid-Western City of Jacksonville, Illinois, are still to be found many aged men and women who will proudly and promptly open their mouths—no matter where or under what circumstances—in order to permit you to inspect gold-foil fillings in approximal surfaces of their bicuspids or molars which were placed there a Half-Century or more ago by the Master Hand of G. V. Black! Did these people know—in the days of their long-vanished Youth—that they were being served by one of the Great Masters of this Profession? They did not! At that time they were just ordinary young people "going to the Dentist to get their teeth fixed"! BUT! In the Soul of that particular Dentist, even in that far-off day, there blazed the Unquenchable Fire of Love for his Fellow Men and the unshakable determination to serve them to the utmost of his ability. So, in spite of the fact that his full Life and highly varied interests called to him to do many other things, in spite of the fact that he was obliged to invent and actually make with his own hands many of the instruments he used, in spite of the fact that his body was always frail and his health uncertain, in spite of the almost pitiful meagerness of his income, this Great Man forged quietly and steadily ahead, *doing the very best he knew how* for every person who came into his office!

The last years of this Great Life were

devoted almost solely to an unselfish effort to teach and make available to others that deep understanding and knowledge of basic principles on which his own preeminence had been based. Today every Dentist in the World worthy of that title knows the "Black" theories and principles by heart, yet how little "Mine-Run" Dentistry actually in position in the mouths of the Great American People shows even an approximation in actual practice and execution of those same principles! Supply Houses the Country over stand ready to deliver, at a moment's notice and at comparatively small cost, an array of instruments more perfect and elaborate than any collection which G. V. Black ever owned, yet as a Profession our average output today must cause the Spirit of G. V. Black to feel that all his labors during a long and self-sacrificing Life were largely in vain.

This should not be so!

Some of the reasons why it *is* so—an analysis of some of the ancient and pathetic Pitfalls into which we as a Profession have inadvertently strayed —and some of the remedies available without the purchase of a single new instrument or the "taking" of a single course of Lectures will be the immediate concern of the Articles of this Series.

534 Jefferson Building

American Dental Association Meeting

Memphis, Tennessee, October 19-23, 1931

Hospitality of Old South Awaits A. D. A. in Memphis

A convention city combining as no other in America the hospitality and tradition of the Old South with the New South of steel and power will greet the American Dental Association when it comes to Memphis in October.

Queen city of the river that gave it birth four centuries ago when De Soto discovered the Mississippi, Memphis is forging forward with a spirit new to much of the South, as transportation by rail and river, highway and airway is uniting with major factors of coal and power to build industries of which the South of twenty-five years ago hardly dreamed.

But it has taken more than that to make Memphis in the past five years sufficiently the city of successful conventions to rank first in the South, among the first ten in the nation. It has taken a quarter of a million convention visitors in that short half-decade—visitors at every kind of gathering, representing commerce, industry, religion, social service and virtually every aim for which men gather together in organized bodies. Such has been the result of the incarnation of long-famed southern hospitality in what Memphis now calls, and practices as, organized hospitality.

Essentially the same factor of accessibility that has been Memphis's greatest aid as a convention city has also built its industries of greatest promise. Seventeen lines of rail in nine systems converge at Memphis to bring in raw materials for its factories, as well as its 60,000 convention guests each year, and to take away the cotton and hard wood that make Memphis a national leader in both these basic commodities.

With the advance of an industrial river front, Memphis has launched on a program of civic beauty climaxed in a riverside boulevard already nearing completion that in its ultimate development will provide a counterpart of Chicago's Lake Shore Drive, reaching from the Twin Bridges north to Memphis's loop business district and south to Riverside Park at the southern city limits. Other new parks and new boulevards will connect to a major parkway system that will encircle the city on all four sides, linking Overton Park, with its art gallery, zoological garden, electrical fountains and golf course, with Riverside and the waterfront boulevard.

Memphis isn't all business, of course. Golf the year round on seven of the south's premier courses, fishing the peer of any in America on lakes at Memphis's very doors, hunting in season, thirty-three parks and playgrounds in a 2000-acre recreational system help make Memphis a city of charms to live in or to visit casually.

Such is the American Dental Association's 1931 convention city—at the crossroads of the South. As a matter of fact, Memphis has been a convention city for centuries untold, even before Columbus. When De Soto and his Spanish warriors came to the site

of Memphis in 1541, he found a major convention of the Chickasaw Indians in session on the shores of the Mississippi, because even then Memphis was at the crossroads of the South, with aboriginal trails converging here from many directions. First Spanish, then French and English armies knew it and here built forts to command the middle South, because they knew that if they commanded the crossroads, they had the key to control.

Andrew Jackson saw the same thing in the future when he came to lay out the infant city in 1819. So Memphis has come forward through its latest century, still holding the keys to the South because of its position at the center of the crossroads, where the American Dental Association will gather next October for a glimpse of its beauty and charm.

American Dental Association Meeting

Memphis, Tennessee, October 19-23, 1931

HOTEL RESERVATIONS

In securing hotel reservations for the 1931 session, consult the hotel rate-sheet and fill out the blank application below. Mail immediately to the hotel you wish to patronize. The hotel will then advise you of the reservation which they make for you. In case your first choice cannot be made, kindly indicate second and third choices. If none of your choices are available, the Hotel Manager will mail your application to the Chairman of Halls and Hotels Committee, who will place your reservation in as favorable a hotel as possible.

Please remember that a reservation constitutes a contract with the hotel to provide you with the accommodations you desire. If you find it impossible to carry out your part of the contract, namely, to occupy the room at the time agreed upon, please write or wire the hotel, in order that your room may be available for other members.

Hotel	Single With Bath	Double With Bath	Single Without Bath	Double Without Bath
Adler, 73 Linden Ave	$2.00 up	$3.50 up 5.00 up (Twin beds)	$1.50 up	$2.50 up
Ambassador, 347 So. Main	2.00	3.50	1.50	2.50
Catholic Club, 185 Adams	...	...	1.25	2.00
Chickasaw, 99 So. Main	...	...	1.00	1.50
Chisca, 270 So. Main	2.00 up	4.50 up 5.00 up (Twin beds)	2.00 up	3.50 up
Claridge, 109 No. Main	3.00 up	4.50 up	...	...
DeSoto, 154 E. Calhoun	...	...	1.25	2.00
Elk's, 69 Jefferson	3.00-$3.50	4.00- 5.00 5.00- 6.00 (Twin beds)	2.00-$2.50 Con. bath	3.00-$4.00 Con. bath
Forest Park, 855 Union	2.00	2.50	1.00- 1.50	1.50- 2.00
Gayoso, 139 So. Main	3.00 up	5.00 up	2.00 up	3.00 up
Hermitage Apts., 200 Union	1.50	2.75	1.00	1.75
Wm. Len, 110 Monroe Ave	2.50 up	4.50 5.00 (Twin beds)	...	...
Longinotti, So. Main St	...	...	1.00	1.50
Parkview, 1914 Poplar	3.50	5.00- 6.00	...	...
Peabody, 149 Union	3.50 up	5.50 up 7.00 up (Twin beds)	...	...
Plaza, 214 Calhoun	2.00	3.00	1.50- 2.00	2.50- 3.00
Polk Apts., 630 Madison	2.00	2.50- 3.00	...	...
Pontotoc, 69 Pontotoc	1.50	2.00	1.00	1.50
Tennessee, 80 So. Third St	2.00 up	3.00 up	...	...
Winona, 110 E. Calhoun	2.00	3.00	1.00- 1.50	2.00- 3.00
Waldorf, So. Main St	1.50	2.00	1.00	1.50

MAIL THIS APPLICATION DIRECT TO THE HOTEL

HOTEL RESERVATION

AMERICAN DENTAL ASSOCIATION, MEMPHIS, TENN., OCTOBER 19-23, 1931

.....Hotel ....., 1931
Memphis, Tenn.

Please reserve sleeping room accommodations as noted below:

.....Room(s) with bath for.....people. Rate per day desired $.....

.....Room(s) without bath for.....people. Rate per day desired $.....

Second choice.....Third choice.....

Please confirm this reservation to applicant. I further agree to notify the hotel at once in the event I am unable to use this reservation.

Important to Hotel Manager.—In the event you cannot accept this reservation, please forward this application at once to DR. E. F. SIMPSON, CHAIRMAN HALLS AND HOTELS COMMITTEE, 735 Sterick Bldg., Memphis, Tenn., who will attend to the assignment of this reservation.

CORRESPONDENCE

An Open Letter to Dr. Alfred Owre

Dear Dr. Owre:

I have not as yet found a dentist who disbelieves in the desirability of there being only one health profession. The difficulty is to secure unanimity of opinions as to the best methods to be followed in bringing this about.

Those with whom I have corresponded and talked on this subject, physicians as well as dentists, believe that the first step to be taken is a thorough reorganization of the entire health (dental and medical) educational methods. By this is meant that no specialist of any kind should practice until he has taken (1) the ground-work course common to all and (2) a special course to secure a distinctive degree for his specialty.

As it is today, any man who secures the M.D. degree is legally permitted to do any or all kinds of specialty work. He is legally permitted to cut you open, remove your gall-bladder and give treatment for any disease man is afflicted with.

One receives the impression from your articles that you are advocating that only dentists should be required to take a special course in a medical college before being permitted to practice; also, that you suggest that another type of men be permitted to do dental surgery, such as root-filling, preparing teeth for fillings, etc., etc., under the supervision of a super-dentist. You do not suggest any restrictions on M.D.'s, who may legally practice any specialty without having to take a special course and be given a special degree.

You know as well as we know that there are poor dentists, and also poor physicians. We do not notice, however, that in your articles you referred to poor medical men and suggest any plan for remedying this condition. Naturally this omission on your part as to the necessity and the desirability of reorganizing medical education creates the impression that you are unfair to dentistry in your treatment of this health question. Also, while finding fault with your own profession, you give them no credit for improvements of any kind.

I have been in practice for over forty years, and the wonderful development in dental service and the improvement in healthy mouth conditions are marked and noticeable. Frankly, I am of the opinion that there has been far greater progress in the services rendered by the *rank and file* of our profession than in any other profession, bar none. That

there are vast opportunities for improvement in both professions none will deny. That a larger percentage of the total number of our profession are striving to secure these improvements and to put them into practice than that of any other profession cannot be questioned. The high percentage of dentists attending all local, state and national conventions proves the correctness of this statement. If we study the *rank and file* of both medical and dental professions, we shall, I think, find that more dentists are interested in diet, preventive measures and careful diagnostic procedures as an aid in helping them to render more efficient dental health service than there are physicians who are interested in and studying dental problems as an aid for them to give more efficient medical health service. If I am wrong, please show me, because it is only the truth that will aid us.

In conclusion, may I ask that you bear in mind the fact that the majority of dentists are not opposed to there being one health profession, embracing and including allopath, homeopath, osteopath, dentists, rhinologists, oculists, surgeons, etc., etc.? We are opposed to making dentistry the only branch of medicine requiring a special degree to practice. Also, we do not believe that the operative procedure in the mouth on vital living tissues, hard or soft, should be regarded as less important from the viewpoint of health than any other operative procedure performed on human beings for the same purpose.

Yours very truly,

(*Signed*) THADDEUS P. HYATT.

DIGESTS

CONTROL OF CARIES AND SYSTEMIC PYORRHEA

By Harold F. Hawkins, D.D.S.

Caries shows in the blood stream a high blood-calcium and a low blood-phosphorus. The phosphates are also deficient in dibasic forms, which are shown in the saliva by an acid reaction and low calcium and in the urine by an alkalin reaction and high calcium.

Systemic pyorrhea gives the opposite picture to that of caries. There is low calcium and high phosphorus. The saliva is moderately acid to neutral, and the calcium is excessive.

In caries a high dibasic-phosphate and Vitamin-D feeding is indicated, while in pyorrhea a high calcium feeding is necessary.

It has been shown that a faulty diet can be ascertained, the correct diet instituted and the progress of the case followed graphically. This is a satisfactory method of preventing and controlling dental caries and systemic pyorrhea.—*The Journal of Dental Research,* April, 1931.

FOCAL INFECTION FROM THE DENTAL VIEWPOINT

By A. M. Goldberg, D.M.D.

The author states that it requires the highest type of diagnostic ability to determine whether or not a certain focus of infection is the cause of a systemic disturbance. It is generally considered proof positive when the condition is cured after the removal of the focus, but this is not necessarily true, since the elimination of the focus may permit a rise in the general resistance, and this alone may be the reason for the improvement.

On the other hand, failure to effect a cure by the removal of the focus does not indicate that the focus was not the etiological factor, since the secondary focus may have been so well established that the removal of the primary had no effect.

The wholesale extraction of teeth without careful study is to be condemned, though it must be admitted that sources of infection should be eliminated. Serial extractions are to be preferred. The removal of dental foci of infection is a preventive and curative measure and will aid in the relief of pain and the prolongation of life. —*The Dental Cosmos,* May, 1931.

RECENT RESEARCHES ON DENTAL CARIES

By Russell W. Bunting, D.D.S.

The author reviews the recent contributions on the subject of dental caries and classifies them under three general groups:

(1) The belief that the resistance of the tooth itself is the most important factor.

(2) The belief that the neutralizing power of the saliva is the most important factor.

(3) The belief that the activity of the aciduric organisms in the mouth is the most important factor.

Vitamin D is emphasized by some, while others stress Vitamin C and others an increase in alkalin ash. An adequate and well-balanced diet is essential and a considerable latitude in the choice of food is permissible. Strict dietary control cannot be applied to large numbers of individuals, and it is fortunate that simple dietary procedures, which can be carried out in the ordinary private home, have proved successful in the control of caries.

Although diet is an important factor, it must be remembered that heredity, age, health and constitutional characteristics play important parts. Furthermore, there is no experimental animal entirely suitable for intensive studies of caries, and in the future research should be carried out on scientifically controlled human subjects.—*The Journal of the American Dental Association*, May, 1931.

Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York, N. Y.

PATHOLOGICAL HISTOLOGY OF TEETH

By Karl Zilkens, Cologne, Germany

Effect of Eugenol on the Pulp

Eugenol was placed in canals following the extraction of the pulps in a series of teeth. Cotton dipped in eugenol was also brought in contact with the exposed pulps in teeth which were subsequently to be extracted because they were out of occlusion. The pulp chamber was sealed with cement. After thirty to forty days the teeth were opened. It was found that the eugenol produced hyperemia of the pulp and injury to the odontoblasts. Just the drilling of a cavity in a tooth often influences the condition of the pulp. In the cases reported there were definite degenerative changes in the pulp next to the cotton with the eugenol. Reticular atrophy also was present. That portion of the pulp farthest from the eugenol was unchanged. Eugenol placed directly upon a pulp destroyed the horns.

Definite periapical changes were noted in experiments on dogs wherein the pulp was removed and paper points inserted in the canals, the points having first been impregnated with eugenol. After sixty days examination under the microscope revealed periapical granulomas. It is the opinion of investigators that engenol definitely injures the pulp and endangers its life. While the sedative value of eugenol is well known, its injurious effect on the pulp is to be noted. Eugenol has been added to root-canal paste and has caused no apparent injury. It will, however, cause a brown discoloration of the tooth.

Influence of Local Anesthesia on the Pulp

The question as to whether or not local anesthesia causes any injury to the pulp has received a lot of consideration. Palazzi, through numerous experiments on human teeth and those of animals, concludes that the change which takes place in the pulp of the tooth due to the injection of novocain is purely temporary and in ten days all is normal again. Much more serious changes occur in the character of the pulp after the placing of a synthetic filling. The death of the pulp may result. In the main, however, it has been shown by a preponderance of evidence, including the radiographic examination at intervals after an injection of novocain, that no permanent harm results. The constitution of the patient plays an important part.

Pulp Amputation

The question of whether to remove the pulp or merely to amputate the pulp portion in the crown of the tooth has not been definitely settled. Those in favor of complete pulp extirpation, cleansing and filling of the canals and sealing of the apex of the tooth believe that here is the best method. When the pulp is infected, this is the only course. Pulp amputation can be carried out only in cases of a healthy pulp and herein lies the difficulty in being able to determine just when the pulp is normal and not already infected. Both methods may be used where indicated. —*Die Fortschritte der Zahnheilkunde,* April, 1931.

DISEASES OF THE EYE OF DENTAL ORIGIN

By O. Bjerrum, University Hospital, Copenhagen, Denmark

Hippocrates in ancient times said that diseases of the teeth can be traced to distant organs which become infected because of these bad teeth. Fauchard in 1728 restated this view. Rosenow in 1914 showed the relation between diseased teeth and the eye.

The eyes may be involved through tooth infection in three ways:

(1) Contiguity.
(2) Metastasis through blood or lymph.
(3) Reflex.

A case is cited in which atrophy of the optic nerve followed the extraction of a maxillary second bicuspid. There was a purulent periostitis arising from the alveolus and involving the anterior part of the maxilla. This crossed over the border of the orbit, penetrating the eye itself. A neuritis of the optic nerve followed, finally ending in atrophy of the optic nerve.

Fistulas from roots of teeth often find their way to the region of the eyes or may involve and inflame the lachrymal glands. The cuspid is frequently the offending tooth. An acute infection of a second bicuspid closed the eye of the patient completely in a case described by the author. All symptoms disappeared upon removal of the tooth. Bach has shown that it is possible to produce herpes of the cornea by injecting the cornea of a rabbit with substances taken from a dental granuloma. He believes that it is possible to carry infection to the eye through the fingers

of the individual which have been in contact with a diseased tooth. Keratitis has been traced to the dental treatment of a diseased tooth.

Dr. Rosenow has contributed many articles to the subject of iritis in connection with the teeth. He has shown that microbes cultured from the granuloma at the root-end produce eye diseases. In certain conditions the streptococcus viridans may change to streptococcus hemolyticus. This point is still in the discussion stage.

The selectivity of various microbes is asserted by Haden, one of Rosenow's disciples. This theory has not yet been generally accepted in Europe.

Lang finds that of 176 cases of iritis 74 came from mouth infection. Sir W. Lang says that of 215 iritis cases said to be of septic origin 139 arose from pyorrheal teeth or dental causes. Worth estimates that 50% of iritis patients suffer through some form of buccal infection. Frederick declares that of 200 iritis cases 74 were definitely due to pyorrhea. Bell, Krebs and Patterson indicate the cure of iritis through dental treatment. In one series of six cases all symptoms of iritis disappeared in two days following the extraction of diseased teeth. In a series of 36 cases half showed iritis on the same side as the infected tooth. Neuritis of the optic nerve has been described by a number of authors as due to some infection of the teeth.

Many reflex pains in and about the eyes are due to infection at the end of a root. When a patient complains of pain in the eyes, the medical examiner should examine the teeth. Diseased teeth are frequently found in the maxilla, and in many instances their removal clears up the eye condition.

The author concludes with a quotation from the work of Terson, who maintains that too many teeth are preserved which endanger not merely the sight of the patient but his life as well. —*La Revue Odontologique,* March, 1931.

MIXED TUMORS OF THE PALATE

By G. AXHAUSEN, Berlin, Germany

Here is a brilliant article, covering the mixed tumors of the palate, with numerous illustrations which are very clear and instructive. The author says that in most instances mixed tumors can be recognized instantly because of certain definite characteristics. They occur on the hard or soft palate, are circumscribed, round and of compact consistency. They are covered with mucous membrane just as the rest of the palate, and from this appearance it is easy to recognize them for what they are, namely, non-malignant tumors. The clinical picture, in addition to the fact that they are slow-growing, do not break down and do not recur when thoroughly removed, makes them benign. They are not nearly so unusual as many believed, and it is well that they be recognized clearly. Many radical operations have been performed to remove the mixed tumor, with considerable loss of structure and attending deformity, when the case could have been cleared up with but a simple operation.

The mixed tumor is of special interest to the histologist. The usual tumor

is of either the connective-tissue or the epithelial type. Here is a combination of both with certain cells which are usually connected with malignant growths. Connective tissue may be seen with spindle cells resembling the spindle-cell sarcoma. Epithelial cells are also seen in a connective-tissue stroma, so that the resemblance to the carcinoma is great throughout. Nevertheless these mixed tumors, even with the characteristic cells of malignant types, are clinically benign. It is important to make an examination of a section of a mixed tumor. A small portion may show only carcinoma cells or sarcoma cells and lead to an incorrect diagnosis with radical intervention. The author is familiar with cases that were handled incorrectly through just such errors. Clinical observations and the location of the growth must be taken into consideration.

The most usual picture of a mixed tumor shows it to be located in or near the median line of the hard palate. There are no other types of growth which are found just here, and the typical appearance makes the diagnosis.

Four cases are described. In one the tumor is directly at the median line. In another it is to one side. Each case showed the tumor to be about the size of a small egg.

These cases must be completely removed. Recurrence in one instance followed after a year and a half because some of the growth had been left behind. The second operation showed no reappearance after two years. In one case the tumor started from the soft palate, extended downward and involved the submaxillary area. It was completely removed and was found to be in a sort of capsule. It was shelled out under local anesthesia, and the patient made an excellent recovery.

The author makes the usual pleas for early recognition of these growths and says that the dentist is in an excellent position to discover them.—*Deutsche Zahnärztliche Wochenschrift*, March, 1931.

WHAT CAN BE EXPECTED FROM DIATHERMY?

By H. Wolff

The study of diathermy brings up a consideration of the high-frequency current. The therapeutic value of this tissues produces a certain quantity of heat, proportionate to the resistance of the tissues, and does not cause irritation. The value of heat in inflammatory cases has been known for a long time. Up to the present time the application of heat has been purely superficial, while diathermy works at a depth.

Teeth which are about to undergo root amputation are treated with diathermy and the root canals properly sterilized. The electrode enters the canal and through the heat of the current coagulates the contents of the canal and definitely sterilizes its contents. The indications for the use of diathermy in root canals are as follows:

(1) Coagulation of the living pulp.
(2) Coagulation of infected pulps.
(3) Acute periodontitis.
(4) Chronic periodontitis.
(5) Pulp gangrene.
(6) Granulomas, cysts, fistulas.

If the pulp is to be removed at one sitting, diathermy is the method of choice. The tooth is first anesthetized.

The pulp is coagulated and is then easily removed, with no danger of secondary hemorrhage.

Infected root canals are first cleaned with hypochlorite of soda, chloramin, etc., and while these drugs are still in the canal, the electrode is inserted and the current passed through the liquid. The current greatly amplifies the bactericidal action of the drugs. Just one or two treatments suffice to give an absolutely sterile canal. The canal is then filled.

The coagulation of the granuloma itself is not feasible, as injury might be caused to the adjacent teeth and structures. If, however, the canal is properly treated and diathermy used, the infection will be removed from the canal and with it the means of existence of the bacteria. The apical area will then get well. The most satisfactory conclusion to the treatment is root amputation, with surgical removal of the granuloma.

Surgical diathermy finds its place in controlling hemorrhage in proximal cavities where there is an excess of soft tissues. It can be used also in cases of gingivitis and stomatitis to control the bleeding. There is no pain, and they may be treated without anesthesia.

Diathermy may be employed to resect granulation tissue in pyorrheal conditions and for the elimination of the pockets. It does nicely also in removing soft tissue for biopsies where a growth is to be studied. The author of this article is highly impressed with the value of diathermy as a dental aid and calls attention to the fact that it must be carefully studied in order to learn its proper use.—*Schweizerische Monatsschrift für Zahnheilkunde,* March, 1931.

DENTAL ECONOMICS

Selling Dental Service

By G. R. T. RICHARDS, D.D.S., Arkansas City, Kansas

"The successful man in our profession is nine-tenths business man and one-tenth dentist." So said a wise old dentist once upon a time. Today he would say, "The successful dentist is fifty per cent salesman, forty per cent business man and ten per cent dentist."

The successful dentist must be a salesman of no mean ability. Nearly all dentists dislike to acknowledge that they are salesmen, because they are too nice to admit that there is anything like a small amount of commercialism in their life work if they are to be successful. Every client who enters the dentist's office is a customer. And a customer or prospect must be sold if he is to be of any value to the dentist. Now, though grudgingly, we have admitted that we have customers and prospects. In order to make a prospect of value, how are we to go about it? A good salesman will say, "You must first have a contact." You cannot sell a man unless you know his needs and have a small idea of his habits, financial condition and physical needs.

Establishing Contacts

How are you to establish those contacts? Remember, you must not advertise. Oh my, no! That is unethical. So you must look for other mediums through which to get yourself in the public eye. First, there are the churches. You can go to church, join lodges, clubs and attend all public doings, not forgetting to carry a pocketful of your cards and constantly talk about yourself and your profession while at these functions. In this manner you will make a few good contacts, and of course it is not advertising. Another way is to be sure that your local newspapers are aware of every trip you take to the adjoining towns and villages. Be sure they say that your trip was one of a professional nature, even if you were there to play golf or take a dip in their swimming pool. This is news, not advertising, and the populace will be acquainted with the fact that you are on earth and a dentist located in their midst.

I am sorry, but it is a fact, that the above-mentioned method is resorted to by many of the novices and by not a few of the older brethren in our profession. It is a cheap method and is advertising of the lowest order.

There are ways of establishing contacts without bombast. This is a funny old world that we live in. Generally it is a gentle and kindly sphere. In any event, it is just what you make it. Treat it kindly and honestly and it will do the same for you. If you would have

people know you, mingle with them. Join in their sports; sympathize with them in their sorrows. In a word, be friendly. You cannot have the whole world for your practice, but you can have it for your friend if you will only let down the bars and be a friend to it. Be a town's man, not merely a dentist.

In your daily walk in life and contact with those whom you would have for friends, be yourself. Be sincere in all that you do and say. Let your watchword be "Sincerity." Have a genuine interest in the people of your locality. Forget whether or not they are your patients. Remember that they are just ordinary human beings, having the same joys and sorrows that you have. Have an interest in them because they are people. If you haven't an interest in them, then by all means cultivate one. Along with this interest, really wish them well, not from your lips but from your heart. Do it because you feel it, not because you think it is good business. Be sincere!

Sincerity is a fundamental quality that you cannot fake. A consummate actor may do it for a while, but it will not last nor will it be appreciated by those with whom you come in contact. As it cannot be faked, be sure that your desire for the welfare of every one is real. When you feel sincere, the rest is easy. If sincerity is easy to see, so then is the real quality easily discernible. It also is the one quality that you cannot hide. The world is looking for sincere people, and it will reward the possessors handsomely. Make the process of pleasing your patient as satisfying to the patient as it is to you. It can be done. The man who does it best is the one who is really sincere in all of his actions. Such men deserve confidence, attention and consideration. Such men get all of these and most of the business. This is a workable theory. Try it!

Now, if you do all this, you will have plenty of business contacts. Don't let these contacts rule you. Control your interviews. The patient is in your chair, and he is there because he wants to buy something. He is taking up your time, and he should pay you therefor, not only because you are giving him something of value but because every patient who comes to your office has cost you something to get him there. If you would save the contact and cost of getting him into your office, you must sell him that about which he has come to inquire.

Creating Interest

You have the contact. Let us look at the next step. Any salesman will tell you that the second and important step in making a sale is the creation of an interest in your product, the services that you have to sell. A patient may come to you with an idea that he wants a certain class of work that you know will not benefit him. It is your duty to create in him a desire for that which will be of lasting benefit to him physically, esthetically and financially and add to his efficiency. Then convince him of the value of your services. Nowadays finances and efficiency go hand in hand. Do not forget to stress the fact that all of the larger corporations today are taking only physically

perfect men into their employ, and that good teeth are a large factor of physical perfection. Take up the merits of your work one by one and go over them carefully with each individual. If your patient is a back number and wants his work done the same as his grandfather had his done, do not pass him up until you have shown him everything it is possible for you to do for him. You may not sell him, but you have made him think and he will talk. In all probability some of his family will hear him and you will gain a foothold therein that will prove very valuable.

When a prospective patient enters your office, do not let him wait on himself, but meet him and display your wares in an interesting manner. Find out what he wants and proceed accordingly. Above all, create an interest in good dental service.

Our businesses are a good deal like privately owned lakes and fishing preserves. In the lake we place fish and other game that are indigenous to such surroundings. In after years, when this game has reached maturity, we reap the rewards of our work and efforts. In our businesses our offices take the place of lakes. Our personalities stock it with the fish, and our professional ability is the tackle with which we reap the rewards of our stocking and previous efforts. Therefore all those who come to our offices are to be fish in our nets—willing fish, however. Dangle your services temptingly before your prospective patient; that is, get your selling audience. Work the lure back and forth before him until he becomes interested. Show him the advantages that will come to him by following your advice. Get him to ask questions; this is equivalent to taking the hook. Sink the hook by your final arguments. Now comes the playing of the fish by beating down his resistance, which is usually lack of interest, and his habit of having his dental operations done according to his lackadaisical old-fashioned routine. When you have done this, you have the fish coming your way, headed for the net. In fact, if your work has been well done, you have him in the net.

Your Originality

Another phase of salesmanship is originality. You must be constantly alert. No two patients can be reached by the same methods. This is where study comes to the front and to your assistance. Study your patients; study yourself. Study the latest dental works, the periodicals. Read! Read widely. Read the professional magazines from cover to cover, advertisements as well as the text matter. Your best selling points come therefrom. Emphasize the fact that your line is a standard one and supervaluable. Show all the details by use of clipped ad cuts, models, specimens and pencil sketches. Clinch your points in this manner. All patients will yield quickly to the concrete, while they will slip out of your grasp if you deal in the abstract.

Find ways to gain the confidence of your patients. Gently, politely but firmly wear down their resistance, though it may take time. In your daily journeys about town you will meet some of the reluctant ones. Greet

them with all the kindness possible. Let neither word nor attitude suggest your business. Their acquaintances will tell them who you are, and your kindly unaffected way will convince them that you are the man to do their work. A repeatedly kindly greeting has been known to bring reluctant patients to our offices when all of the high-pressure salesmanship tactics usually harden the patient, while kindness, like the constant trickle of water, will wear away the hardest stone. So treat the prospect with kindness and consideration.

YOUR GENERAL ATTITUDE

Do not let the wealth and position of a patient frighten you. You are on terms of equality with every one when it comes to the exercise of common virtues. Remember that the patient is in your chair because he knows that you know more about your calling than he does. In his line he may be and probably is a wizard, but his presence in your office should tell you that you have something that he wants and he thinks you are the man best fitted to deliver the goods. In short, you both have something for the other fellow. Be polite but firm with the fellow who would try to impress you with his worth. Never let any one, even the lowest Senegambian, outdo you in the matter of politeness. Employ methods to impress upon your patients, especially the ladies, that their wants are being well met. Remember this, because the average practice is made up largely of the fair sex.

The idea that only a user can thoroughly appreciate the selling points of an article is, in a measure, obsolete. With proper models, pictures and pencil sketches you can portray what you wish the patient to grasp. Sometimes patients tell us that they want nothing done now, as they are in no pain and their teeth are not hurting them. Just show some of these patients a few statistics dealing with deaths resulting from just such teeth as they have—teeth that did not hurt nor bother the patient, but the neglect of which did result fatally. You will get a kick out of the silence that will follow, and nine times out of ten you will get a contract in jig time. In some cases it takes time for such statistics to soak in, but in a few moments these patients will be willing to listen to your arguments, even though they paid scant attention before. This is a time for you to begin all over, couching your arguments in new and forceful language. They will listen now.

Let the patient ask questions. Answer him patiently and kindly. Never let him wander from the subject. If he should, lead him back to the subject just where he left it. Talk construction to the patient, but never let him talk it to you. Construction is *your* province. That and merchandising are your province alone, even though you hate ever so much the word *merchandising* in connection with your profession. Your job is to show him the mechanical, esthetic and financial benefits. Always be on the watch to discover points that will appeal to the patient as you progress with your talk. Especially stress personal satisfaction at all times. Mention the advantages that he has, in a dental way, over those enjoyed by his

forefathers. Convince him that he can rely upon your services at all times, and, above all, show him what your services mean to him.

We just now mentioned the word *merchandising*. By this is meant the systematic profits which our services make possible. It is the point of view from which the sales talk as well as the selling point is presented. This angle dominates the demonstration and argument of the dentist for his services. It is the hinge upon which hangs the success or failure of the dentist as a salesman. When talking to a patient, always keep in the back of your mind the thought: "If I do you a good service, you owe me a profit for so doing, and I am going to get it."

It is often advanced that the big-town dentist is the best man to go to. This is a foolish point. Show the patient that we are all on equal footing, provided we are from good schools. In fact, the man in the smaller town has the advantage in lower overhead, which he passes on to his patient. The big-town man has a tremendous overhead, which some one must pay, and that some one is the patient every time. In a matter of supplies we are all equal from New York to Podunk Corners.

Ofttimes a repeated statement is necessary to drive home an argument. So do not fail to repeat any good thought you may receive on economies or other points as you progress. When repeating a point, always clothe your thought in new language. It gives the average patient a grave respect for your ability, as well as makes your point more convincing.

A good salesman never oversells his customer. Neither does he undersell him. Many of us get the idea that our patients can afford to buy no more than we ourselves could. Get that idea out of your head. Above all, get it out of your sales talk. Sell him what you would buy if you were in his place.

Do not try to sell too many different kinds of service. For instance, in dentures feature a condensite, a vulcanite and a metal denture. Be equally frugal in other branches. Unless specially trained, do not attempt exodontia. Do not imagine that such restrictions handicap you. From from it! They really benefit you. They increase your selling economy and personal efficiency. Take a lesson from a large wholesale house. Their motto or slogan is: "Fewer styles and numbers." Their argument is not only that it cuts down manufacturing expenses, but that their products are more easily and surely sold, thus affording greater profits.

You know your patrons. You know what they may reasonably be sold. What you have done in the past is a big factor in what you should and will sell. What another dentist does has no bearing on what you should do. Keep away from what he does. Let him paddle his own canoe. However, it is well to compare your location and equipment with his, but that is as far as you should go, because from there on your success rests on your own ability and personality. Remember that your territory is always undersold. Sell it up to its limit, but do not oversell it.

Keep down personal interruptions, such as occasional lay-offs, vacations and others over which you have control. Weather, public affairs, holidays

and circumstances over which you have no control will slow down your output without any personal assistance from you.

Aim at a point and hit it. A marksman shoots at a target. Do the same! What others are doing you can do. What they have done is an inspiration, provided you are following the big men from the big universities.

When you have made your sale, make it stick. Be businesslike. Collect a deposit. This is necessary, because if money has changed hands, there is less likelihood of a cancellation. It is the most disheartening thing that we can experience to work hours in selling a denture or a large contract and later in the day have the patient call up and cancel his date indefinitely or, worse yet, forget to keep his appointment at the appointed time. Such actions take the joy out of the practice of the greatest profession on earth. They cause more dissatisfaction in our ranks than any other thing. Yet the fault is largely ours, because we do not close the sale in such a way that there is not a chance of a retreat.

"Misery loves company" is an old adage. It is also said: "In the misfortunes of others there is a gleam of satisfaction for ourselves." We envy the salesman who comes to our office. He sells us a bill of goods, and we take them without a kick. It seems so easy. How we wish that we could do the same thing for years and years! Forget it—he has his troubles! All of the men with whom he deals are not you. The very next man upon whom he calls will give him a nice order and, almost as soon as his back is turned, will call the house and cancel the order. We all have our troubles, but let us get a lesson from each one. May they teach us ways to avert our troubles! Remember that every cancellation costs us good money. Sell thoroughly and close with a deposit. Then get the arrangements made for future dates, and stop talking before you have talked yourself out of the work.

PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

I should like to ascertain the cause of the following phenomenon:

I had as a patient a boy, aged 8, with both lower first molars badly decayed. Preparatory to extracting those teeth I gave a mandibular injection on each side.

In about ten minutes numbness of the lower lip and of the tongue ensued, indicating the correctness of the injections.

But also anesthesia of the branches of the superior maxillary nerve (left side only) was nearly fully established.

The left side of the patient's face also, from the mouth to the eye, from the nose to the zygomatic arch, became very white. No complication ensued.

M. M.

ANSWER.—We have never heard of a case such as you describe and can attribute it only to an anatomical anomaly. However, we shall be glad to publish it in the hope that some of our readers may be able to furnish an explanation.

Editor, Practical Hints:

I have a patient who is unable to keep the upper and lower full dentures in her mouth due to the intense taste and burning sensation, not only under the denture bases but all over the mouth and lips. The patient describes the taste as "brassy."

This is the second set of dentures that have been made for this patient. The first were of red rubber, and the second of rubber with no coloring matter whatsoever.

She has had a rather complete physical examination and seems to have no systemic disorders which might be responsible for this condition.

Is there a reasonable chance that if the cases were made of a material other than rubber, any relief would be obtained?

Any suggestions would be appreciated.

H. A.

ANSWER.—The burning sensation may be due to pressure on the palatine nerves or to an idiosyncrasy to vulcanite. It has also been found that this

trouble may be caused by the roughness of the palatal surface of the denture. A metal plate might set matters right, but it would be unwise to promise that this would occur.

The taste is another thing, and it will probably be very difficult to locate the cause. Many men believe that it is due to infection. It would be well to x-ray the mouth and be sure that the tonsils and accessory sinuses are in good condition.

Editor, Practical Hints:

I placed a fixed bridge in the mouth of a girl aged fourteen. Open-face crowns were placed on the upper right cuspid and on the upper left central, supplying the upper right central and lateral and the upper left lateral.

This bridge has been in place for almost a year now and yet the patient complains that the bridge or area is very sensitive, even when drinking cold water. The teeth used as abutments did not require any excessive grinding for the preparation.

What can be done to relieve the condition and give the patient comfort?

H. S.

ANSWER.—It must be remembered that the pulps in the teeth of a person of fourteen are much larger than those in a person of forty, and what would not be excessive grinding in the latter case might cause trouble in the former. There is a possibility that there is a leak under one of the crowns. The margins should be carefully examined and, if necessary, the bridge removed. Constant irritation may cause a pulpitis.

It would be well to check the occlusion in various positions, since traumatic occlusion may be the cause of the sensitiveness.

Editor, Practical Hints:

Would you please advise me on the following:

When we use silver nitrate on teeth sensitive around the gum line or on teeth eroded,

(1) At what percentage should the solution be used?
(2) Is it a solution in water only?
(3) What is the best technic of application?

M. L.

ANSWER.—The best solution of silver nitrate is made as follows:

A saturated solution of silver nitrate in water is made and to this is added, little by little, strong ammonia. A dark precipitate of silver oxid is thrown down and more ammonia is added until the solution clears up.

This is the No. 1 solution of the Howe formula and is applied to the sensitive areas or to the decayed teeth. Solution No. 2 (25% solution of formalin in water) is then applied, which precipitates the silver. In places near the pulp it is safer to use eugenol instead of the formalin, as it is less irritating.

Editor, Practical Hints:

I should like to have some detailed information as to bleaching of discolored teeth (usually devitalized teeth). Kindly inform me as to a simple effective method.

Is bleaching of teeth practicable, and what are the objections, if there are any?

W. J. C.

ANSWER.—As far as we know, the only teeth that can be successfully bleached are the non-vital ones, since it is necessary to gain access to the pulp chamber.

In the majority of cases the stain will be found to be of an organic nature and consequently the best agent to use is a saturated solution of sodium dioxid. The tooth to be treated is isolated by the rubber dam, great care being taken to see that it is tight. The apical third of the root must also be sealed. The pulp chamber and canal are opened and the sodium dioxid applied on asbestos fiber. When the dentin has been thoroughly saturated, 10% sulphuric acid is applied, which neutralizes the alkali and forces out the contents of the dentinal tubuli. The tooth is then washed out thoroughly with hot distilled water. Metal instruments should not be used in applying the bleaching agent.

As a rule the results are very satisfactory, although sometimes it is necessary to repeat the operation.

Editor, Practical Hints:

One of my patients, a young man, single, aged thirty, has suddenly commenced to develop several white spots on the cervical portion of his bicuspids and molars. I advised cod-liver oil, which he took for a while, but which he now claims upsets his digestive apparatus. His diet seems correct.

I have read recently of several men using calcium gluconate for a similar condition, with some success. Could you ascertain for me the dosage and method of administration of this medicine?

A. A. F.

ANSWER.—Calcium gluconate is the calcium salt of gluconic acid, an oxidation product of glucose, and it contains 9.3% of elementary calcium. The dose of the powder is a teaspoonful three times a day in orange juice or water, or two tablets three times a day. The tablets should be thoroughly chewed and followed by a glass of water.

Editor, Practical Hints:

I have a patient, a young married woman, whom I am treating for pyorrhea. There is very little pus and very little bleeding, but there is constant pain in the gums around the neck of the teeth. Also, there is pain in the process from which the teeth were extracted about six months ago.

E. G. B.

ANSWER.—The pain at the necks of the teeth is probably due to the recession of the gums and may be helped by applications of silver nitrate in the posterior part of the mouth and a saturated solution of zinc chlorid in the anterior.

The pain in the process is possibly due to infection that was not eliminated when the teeth were extracted. X-rays of these areas might help in determining the cause and subsequent treatment.

Editor, Practical Hints:

I have been aided by PRACTICAL HINTS many times and am again coming to you for some information.

CASE I

The patient, male, aged 21, in good health, has a peculiar ailment that I have not been able to cope with. He gets a slight whitening and slough of the tissues at the gingival, which is indicative, I know, of Vincent's infection. His gums bleed when he brushes his teeth, and also when pressure is exerted upon them with the fingertip, as in massage. I have treated his teeth and gums for Vincent's infection and have cleared up the condition, but it returns after about a week's time. His mouth is clean and healthy otherwise, and he takes care of his teeth. I have had slides made recently, which came back negative, and also had a Wassermann taken, which came back negative. This condition has been prevalent for about two years, and the patient has been treated by both dentists and physicians. He is a heavy cigarette-smoker and smokes a package a day.

CASE II

Patient, male, aged ten. This young fellow had the misfortune of falling and breaking off his two upper central incisors, the roots of which I extracted September 13, 1930. Is it advisable to put in a fixed bridge for this patient at this time, or is some other procedure indicated?

Yesterday a patient asked me whether or not our drinking water was harmful to the teeth. I told him it was not. We have a very hard water here and it contains lots of iron. Have you ever heard of water affecting the teeth in regard to decay?

R. P. N.

ANSWER.—*Case I.* The patient probably has a case of chronic Vincent's. Either the condition has never been wholly cleared up or else the lowered resistance of the tissues makes reinfection possible. The treatment takes care only of the active symptoms. The smoking is a factor in the persistence of the trouble and must be left off *entirely* if he wishes to be cured. The use of very hot drinks and highly spiced foods must be omitted, as well as the use of alcohol.

Case II. It would hardly seem advisable to construct a bridge for so young a patient, but the space should be maintained by means of bands on the laterals joined by a bar. They should be watched carefully.

We have never heard of water affecting teeth in regard to caries, but many claim that water is the cause of mottled enamel.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All communications should be addressed to Elsie Grey, care of THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT-CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE GREY. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE GREY—SHE WILL HELP YOU.

*Dear Miss Grey:**

This is the first time I have had the pleasure of writing to you, but I read your articles every month and get a great many helpful hints from them. I should greatly appreciate anything you could tell me about the dental assistant's personal appearance.

A DENTAL ASSISTANT.

ANSWER.—There are two main points in the appearance of the dental assistant which must be apparent at first glance. The first is immaculate cleanliness, the second is attractiveness.

By attractiveness I mean not extraordinary beauty of face or form but that something which we term *personality*, and which is the result of a pleasing appearance plus good manners.

Under the heading of cleanliness come an immaculate uniform, cap, shoes and hose, well-groomed hair, well-kept hands and finger-nails, a clean face and neck, and bodily cleanliness or personal hygiene.

For the uniform, choose one that is well cut and of good fit for your figure, preferably with high neck and long sleeves. However, one with a turned-down collar may be more suitable if you are inclined to be short of stature and of a full figure. Never wear a Hoover apron or a similar type of garment, since these are worn by kitchen maids, elevator operators, waitresses, etc. The dental assistant's uniform should have a dignified, professional appearance at all times.

The cap, if you wear one—and we believe that one should be worn to complement the professional garb—should be well cut and well fitting, covering the hair and not perched on the top or the back of the head like a butterfly just ready to take wing. It may

* *Elsie Pierce* has taken a new name. Hereafter all communications should be addressed to ELSIE GREY.

look "cute," but it certainly does not look dignified.

The shoes should be neat and of a sensible cut and fit, with moderate or low heels, fitted with rubber heels. The clicking of heels on the office floors does not add to the peace and quiet that should always attend the service to patients. The hose should always be white, never fancy nor too sheer.

All the articles of clothing mentioned should be white and kept white. They should be changed as often as they show traces of soil. No jewelry of any kind should be worn; exceptions are made for wedding or engagement rings, but even these are barred in some offices if they are very elaborate.

Regarding the personal grooming it should always be apparent that every care has been given that phase of one's appearance. The hair should always be clean and tidily arranged, the hands always clean and soft in appearance. The use of reliable hand-creams and lotions is essential to one who has her hands in water so much of the time as does an assistant. The finger-nails should not be too long; they should be clean and never gaudily enameled. Colored finger-nails might look nice on the hands of chorus girls, but they certainly are out of place on the hands of a nurse. We also urge that little or no cosmetics be used on the face. We know that both of these "modish styles" are frowned upon by many dentists, and that they have cost many a dental assistant a good position. Personal hygiene is vital. There should never be an odor of perspiration apparent or any other bodily odor. The teeth should always be in perfect condition. A dental assistant through the appearance of her mouth and teeth bespeaks good dentistry. Watch out for halitosis.

The appearance of a professional individual should be as carefully guarded away from the office as it is in it. Dress in a sensible business attire when traveling to and from the office, and not in your cast-off party clothes. Cultivate at all times a pleasing manner of speech and voice, as well as tact, poise and good judgment. Never smoke nor chew gum in the office or in public places where you are representing your calling. Never use slang, but cultivate good English. Never gossip with patients. These latter are considered from the attractiveness or "charm" side of the picture we have tried to paint for you of the pleasing appearance of the dental assistant, and they go a long way to prove her ability as a professional individual, as they are simply the outgrowth of common-sense application, which is or should be the keynote of her service in any dental office.

Dear Miss Grey:

May I ask if it is the duty of an assistant to clean up the office? I have been in this position for some time and always do the picking up around the office. I do not mind dusting and seeing that things are in their places, but I do not like to have the doctor point his finger at something I have missed while trying to get through to get the next patient ready.

You know that an assistant is all in white and the uniforms soil easily. I have been working here for three years without one raise in salary. Some dentists do not appreciate what you do for

them, but just point their fingers at as little a thing as a hair.

"WILLING."

ANSWER.—We appreciate that you may have been disturbed at your employer's seeming unreasonableness, but we know of no better cure to prevent the pointing of fingers than to have everything in such perfect order that there will be no reason for such a gesture. Why not talk this over with your employer? And, incidentally, you might speak of your having been with him three years without the encouragement of a raise in salary.

We do not advocate that the heavy cleaning in the office be done by the assistant. This is a scrub-woman's or a janitor's job. For the very reason you mention, an assistant should always be immaculate in appearance, and, further, an assistant cannot do both the professional service and the scrubbing and do either well. However, we do believe that, with the heavy cleaning being done by those qualified to do this type of work, the assistant should take enough time each day to see to it that there is no dust in evidence, and that all equipment, instruments, etc., are in order and in their places. This will mean a few minutes in the morning before the day's work begins and may require a touch here and there as the day progresses.

We commend the assistant who has pride in her office environment, and who is as particular about its cleanliness and attractiveness as she is of her own home, and we do not compliment the dentist who points fingers. We believe there are other means of accomplishing satisfactory results.

Dear Miss Grey:

I have just started as a dental assistant and should like a little advice from you. I believe it is my duty to ask the patients for money, but I do not know how to approach them when they are behind in their payments. Also, while I am assisting the doctor at the chair and some one walks into the waiting room, am I supposed to see who it is or wait? How am I to greet the patient who has just walked in?

A BEGINNER.

ANSWER.—If arrangements have been made with the patient that she is supposed to pay a certain sum each week, or that she is to pay for each piece of work as finished, or that she is to pay so much on deposit before work is started and so much at stated intervals, etc., you can easily check up and on the date of payment ask for what is due when she comes to your desk for the next appointment. You can say, "Mrs. Blank, today is the date for your agreed payment on account. Shall I make out a receipt for you?" or, "I have your receipt ready, Mrs. Blank, for the usual payment on account of $20.00."

If no arrangement has been made at the first sitting as to how the fees are to be paid, then at the second appointment you should ask the patient how she wishes to pay for the work, after having consulted with the doctor as to his wishes in the matter and the amount of the fees to be charged.

In regard to leaving the doctor and the patient at the chair, it depends on what you are doing. If you are simply standing waiting for something to come up for you to do, then I should say

that you should go immediately to the waiting room and see who is there. If you are mixing cement or amalgam or doing any other such service, then you must wait until you have finished that piece of work before leaving the chair side.

In greeting the person who has come into the waiting room, simply say, "Good morning, Mrs. Blank," or, "Good afternoon," as the case may be, adding, "Dr. Dash will see you in a few moments. Please make yourself comfortable."

If it is a person on some errand or other not professional, ask him to give you his name and message and you will take it to the doctor. Write this on a pad and place it so that the doctor can see it. He will let you know by a sign whether or not he is interested, and you can go back to the person with the result, saying, "I am sorry, but Dr. Dash will not be able to see you this morning," or, "Dr. Dash will see you in a short while for a moment," or, "If you will give me your telephone number, I will call you when Dr. Dash is not busy."

You will have to learn to discriminate among callers. Some you can dismiss without ever troubling the doctor, such as beggars, peddlers, etc. A simple, cheerful greeting and a quiet, dignified manner will help you to greet any one satisfactorily.

Dear Miss Grey:

I have only recently become a dental assistant, and I find my work very interesting. I am very particular about the appearance of the operating room, but there is one thing that bothers me. The porcelain bowl has developed an ugly yellow stain from the water. Can you advise me how I may restore the bowl to its former whiteness?

B. M. R., N. Y.

Answer.—Use a strong solution of oxalic acid. Apply with a small stiff brush to the stained parts, let stand for ten or fifteen minutes, then rinse thoroughly. Apply a second time or each day for a while until all traces of the stain have disappeared. A discarded mucilage-bottle brush makes a good applicator for your solution. Do not allow any of it to touch or splash the unit or chair, as it is very caustic, and use care in handling it. Mix it in a small porcelain or enamel dish and bottle in a well-labeled container. Be sure to clean the mixing dish well after using.

We congratulate you upon your desire to have the operating-room appearance all that it should be.

Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

The annual meeting of the Educational and Efficiency Society for Dental Assistants, First District, New York, Inc., was held at Hotel Pennsylvania on May 12, 1931. Reports of the outgoing administration were read and adopted, and the following members were elected to office and installed for

the year 1931-1932: President, Mary A. O'Connor (c/o Dr. E. Reiner, Cliffside, N. J.); Vice-President, Blanche Ferraro; Corresponding Secretary, Frances Green; Recording Secretary, Robina A. McMurdo; Registrar, Gertrude Gehm; Directors, Juliette A. Southard, Elizabeth V. Shoemaker, Ethel M. Pollack.

The Society will be in recess until the second Tuesday of October, when the first regular meeting of the new season will be held. The Society meets regularly on the second Tuesday of each month, October to May, inclusive. Dental assistants employed in ethical dental offices are invited to join. A cordial welcome is always extended at the meetings to members of the dental profession.

Colorado Dental Assistants Association

The members of the Colorado Dental Assistants Association held their annual banquet in the Crystal Room of the Cosmopolitan Hotel, Denver, on May 5, 1931, with Mrs. Helen Hancock acting as toastmistress.

Dr. A. A. Kahan, the first Honorary Member of the Association; Dr. I. R. Bertram, President of the Colorado State Dental Association, and Dr. A. W. Starbuck, President of the Denver Dental Association, were the guests of honor.

A musical entertainment followed the banquet, and the affair was a great success.

Montreal Dental Assistants Association

The Montreal Dental Assistants Association held their first executives' meeting at Dr. Saunders' office in the Medical-Dental Building, Montreal, on May 20, 1931, with Miss E. Currie presiding. The program for the fall was arranged and Miss Currie appointed delegate to the Toronto Dental Nurses Alumnæ and Dental Assistants convention.

FUTURE EVENTS

THE MONTREAL DENTAL CLUB will hold its Seventh Annual Fall Clinic in the Windsor Hotel, Montreal, October 15-17, 1931, in conjunction with the McGill University Graduates' Reunion, which opens on October 14th.

ERWIN C. BURBANK, *Chairman of Publicity,*
1008 Medical Arts Bldg., Montreal, Canada.

THE AMERICAN SOCIETY OF ORAL SURGEONS AND EXODONTISTS will hold its Thirteenth Annual Meeting at The Elks' Hotel, Memphis, Tenn., October 16-17, 1931.

HOWARD C. MILLER, *Secretary,*
55 East Washington St., Chicago.

THE AMERICAN DENTAL ASSISTANTS ASSOCIATION will hold its Seventh Annual Meeting at Memphis, Tenn., October 19-22, 1931.

RUTH S. ROGERS, *President.*
Suite 803, 223 West Jackson Blvd.
Chicago, Ill.

THE AMERICAN DENTAL HYGIENISTS' ASSOCIATION will hold its Eighth Annual Session in Memphis, Tenn., October 19-23, 1931.

AGNES G. MORRIS, *Secretary,*
886 Main St., Bridgeport, Conn.

THE SOCIETY FOR THE ADVANCEMENT OF GENERAL ANESTHESIA IN DENTISTRY will hold its next meeting at Saltzman's, 60 East 42nd Street, Lincoln Building, New York, on Monday evening, October 26, 1931.

The meeting will open with a dinner at seven o'clock, and the scientific session will commence at eight o'clock.

The essayist of the evening will be Frank W. Rounds, D.D.S., of Boston, Mass., who will present a talk entitled *Practical Suggestions in Anesthesia for the General Dentist.* Dr. Rounds is President of the American Society of Exodontists and Oral Surgeons and has earned a well merited reputation in his specialty.

The officers of the Society who have been elected for 1931-1932 are as follows: James T. Gwathmey, M.D., New York, Honorary President; M. Hillel Feldman, D.D.S., New York, President; Irwin Abel, D.D.S., New York, Vice-President; Leonard Morvay, D.D.S., Newark, N. J., Secretary-Treasurer.

Membership is open to all ethical practitioners subscribing to the code of ethics of the American Dental Association.

GREATER NEW YORK DECEMBER MEETING

The Seventh Greater New York December Meeting will be held at the Hotel Pennsylvania, New York, November 30-December 4, 1931.

This meeting is held under the auspices of the First and Second District Dental Societies of the State of New York. Plans for this meeting provide for timely essays on important subjects and a complete and comprehensive series of clinics, together with an interesting group of topical discussions.

The Chicago Dental Society has accepted an invitation to furnish essayists and clinicians for the meeting, which promises much for those who attend.

Plans are being formulated for a Joint Meeting of the Medical Societies of the Five Boroughs of Greater New York and the First and Second District Dental Societies.

An exhibit by dental manufacturers will continue throughout the meeting.

JOHN T. HANKS, *Chairman,*
CARROLL B. WHITCOMB, *Vice-Chairman.*

THE OHIO STATE DENTAL SOCIETY will hold its Sixty-Sixth Annual Meeting at the Netherland Plaza Hotel, Cincinnati, Ohio, December 1-3, 1931.

The Southern Society of Orthodontists will hold its meeting in Cincinnati on the same dates.

A cordial invitation is extended to all members of the American Dental Association.

E. C. MILLS, *Secretary*,
255 East Broad St., Columbus.
E. J. ROCHE, *Publicity Chairman*,
453 Doctors Bldg., Cincinnati.

THE NEW YORK DENTAL ECONOMIC SOCIETY has arranged the following program for the ensuing year:

(1) *The Building of Good Will*—P. Wesley Coombs, Sr., Associate Professor of Marketing, New York University.

(2) *Psychology in Business and Profession*—N. L. Hoopingarner, Associate Professor of Business Psychology, New York University.

(3) *Personality Inventory*—To be made by the Psychological Corporation of New York.

(4) *The Present Status of the Principles and Practice of Good Dentistry*—Alfred W. Walker, Assistant Professor Pulp-Canal Therapy, New York University.

(5) *Law for the Dentist*—M. G. Jenkins, Attorney for the United States Fidelity and Guaranty Company.

(6) *Expression, Impressiveness, Poise*—Walker Matteson, Department of Business English, New York University.

(7) *The Present Status of Medico-Dental Research and Education*—Speaker to be announced.

(8) *The Efficient Administration of Dental Practice*—Speaker to be announced.

The purpose of the New York Dental Economic Society is to promote the best interests of its members. They have as a common ideal the sincere and active interest in self-development and improvement as these factors relate to public welfare.

Membership in the Society is now open to all ethical dentists in New York. Application for membership is subject to the approval of the membership committee and to a two-thirds majority vote of the Society.

JACOB REINER, *President*,
MORRIS TURKEL, *Secretary*,
708 Lexington Avenue, New York, N. Y.
HERMAN ALOFSIN, *Chairman Program Committee*.